THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

COMPUTERWORLD

$2.00 A COPY; $44/YEAR | MAY 20, 1985 | VOL. XIX, NO. 20

**In Depth**
Strategic vision
**Follows 56**

**Hardware solutions**
Data base machines' popularity grows/63

**View from the top**
Honeywell's Renier on the company's reorganization/71

# Microvax II debuts; users give high marks

By Eric Bender
CW Staff

BOSTON — Digital Equipment Corp. last week unveiled the Microvax II, said to run all VAX software and to give VAX-11/780-level performance at a fraction of the cost. The system gathered bouquets from early users and analysts following its formal debut here.

"We're very pleased with the machine," said Richard Newton, a professor of computer science at the University of California at Berkeley, a Microvax II beta test site. "We can't fault it so far. It's the first machine to reach this level of price/performance."

"Its performance was better than we would have expected," said Al Higgenson, president of Caddex Corp., a DEC OEM in Woodinville, Wash. "We really have now taken the power of a large computer room right out to the people."

George Colony, president of Forrester Research, Inc. in Cambridge, Mass., also applauded the supermicro's price/performance characteristics and gave it a favorable overall review. Colony joined other analysts, however, in suggesting that the machine will elbow some other VAX machines out of the limelight.

"DEC is going to eat some of its children, specifically the 11/725 and 11/730," he said. "I think the 11/750 will be threatened as well."

DEC officials did little to squelch this speculation, making no apparent moves to reprice or otherwise reposition the existing line. Asked about plans for machines caught between the high-end VAX

See VAX page 8

## TOP OF THE NEWS

**Birth defects can be traced to microwave transmissions,** a New Jersey citizens group claimed. Page 2.

■

**The first commercial user of Amdahl's 5868 multiprocessor** likes the machine and the $40,000-per-year savings in systems programs the shop now reaps. Page 4.

■

**AT&T's Unix System V is now available on Prime's Series 50.** Primix will run co-resident with and port applications written for Primos, the company's mainstay operating system. Page 7.

■

**Spanning the years.** Blue Cross/Blue Shield of Massachusetts uses a range of equipment introduced during the past two decades in an environment geared only toward production. Page 10.

■

**Remember O. P. M.?** The computer leasing company that bilked investors out of more than $200 million will be purchased by a British firm, pending court approval. Page 71.

■

# Breaking up easy to do for Bell MIS

By Paul Korzeniowski
CW Staff

MIS departments at the former Bell operating companies have thus far been sheltered from the postdivestiture trauma of separation from AT&T, according to interviews with MIS managers at the companies.

The trauma in other quarters has been well documented. Customers were saddled with confusing service policies as AT&T and the former operating companies tried to determine who was responsible for what. The divested operating companies tightened their belts by significantly trimming their staffs: Ameritech, for example, has cut approximately 7% of its 112,000-member work force, and U.S. West has let go 13,000 workers.

Despite such changes, MIS managers at the former operating companies report that life for them today does not differ very much from predivestiture days. "I doubt anyone would say that there have been drastic changes since divestiture," said Daniel Muntner, manager of capacity planning at Illinois Bell Telephone Co.

Even though former operating companies reduced personnel, data processing managers report that their staffs have increased or at least remained stable. "Our staff has increased by approximately 10% this year," said Thomas Gallagher, Information System Organization assistant vice-president at Nynex Corp.'s New England branch. The

See DIVESTED page 15

# Corporate moves: A tale of two DP shops

## With local division's buy out, DP center starts from scratch

By Tom Henkel
CW Staff

WEIRTON, W. Va. — Almost every DP executive has occasionally wished for a magic wand that, with a wave, would make the firm's data center, applications backlog, irate users and incompetent employees permanently invisible.

For most executives, miracles never happen. But for a group of former DP workers at National Steel Corp. here, the dream came true.

National Steel's parent company, National Intergroup, Inc., decided in 1983 to close its Weirton Steel Division and consolidate its DP operations here and at another data center in St. Louis. Its purpose was to form a for-profit center, Genix Corp., in Pittsburgh, giving some DP employees here an almost unprecedented chance to start over with a clean slate.

Employees at the Weirton Steel Division had voted to buy the division from National Intergroup under the federal Employee Stock Ownership Program. As a division of National Steel, the Weirton Steel Division had use of National Steel's DP services. Now, as Weirton Steel Corp., it had to build its own data center and hire the staff to run it.

See STEEL page 6

## DP center-turned-business finds mind-set must change

By Clinton Wilder
CW Staff

PITTSBURGH — Here in the heart of steel country, the parent company of one of the nation's largest steel producers, National Steel Corp., is hoping to forge profits in data processing. The new direction has turned National Steel's former DP operation into a full-scale business.

That business, called Genix Corp., began its for-profit operation Jan. 1 in a multimillion-dollar data center on the site of a former apple orchard 15 miles from downtown Pittsburgh. Although most of its current customers are other subsidiaries of the $2.3 billion parent firm, the National Intergroup, Inc., Genix said it believes it has the hardware (an IBM 3081, 3083 AP, 3033 MP and two 370/158s) and the talent to become a significant player in the business of contracted DP services.

Genix grew out of the consolidation of National Steel DP centers in St. Louis and Weirton, W. Va., in 1983. Turning a DP department into a business required more than a diesel-generated backup power system, new mainframe and major upgrading of communications and data security. It also required a complete mind-set turnaround.

See GENIX page 8

CW
0179526
J BROWN
UNIV MICROFILMS INTERNATL
300 N ZEEB RD
ANN ARBOR MI 48106
V

NEWSPAPER

# N.J. transmissions hazardous?

## Group blames birth defects on earth stations' microwaves

By Paul Korzeniowski
CW Staff

VERNON, N.J. — A citizens group and three satellite network vendors here are locked in a Love Canal-like debate.

This rural village houses major ground station facilities for three domestic satellite communications carriers: RCA American Communications, Western Union Corp. and American Satellite Co. Vernon's hills buffer the city and create a radio-free zone, enabling clear terrestrial transmissions. Vendor earth stations ship voice, video and data information to satellites that relay the information to receiving microwave dishes on the Eastern seaboard.

Recently, Citizens Against the Towers (CAT), formed in 1982, charged that the earth stations have caused an abnormal number of health problems here, a claim that the vendors deny. CAT has 300 members; Vernon's population is approximately 16,000.

### Not enough cases to signify problem

When CAT was formed, it lobbied the New Jersey Board of Health to conduct a study to determine if incidences of Down's syndrome had increased since the first tower was built in 1975. Last summer, the state released the study. It found three cases of Down's syndrome, one more than statistical averages but not enough to signify a problem.

When the report was released, CAT challenged the findings. "CAT found 10 cases of Down's syndrome, 500% more than normal," noted Elise Kreindler, CAT vice-president. "We wanted to see how accurate the state's information would be. The state searched only for addresses where Vernon was listed as the city. It should have also included addresses of Vernon boroughs. The boroughs are part of Vernon." The state has decided to reopen the study.

In addition to the increased incidences of Down's syndrome, CAT reported that there were high rates of other birth defects, including children born with clubfeet, heart problems and dislocated hips. CAT has claimed that some citizens are in direct line with microwave transmissions and are constantly being exposed to radiation that has caused the health problems. "Two women who lived next door to one another within five days gave birth to children with Down's syndrome," Kreindler said. "What are the odds of something like that happening?"

Although earth station facilities have been used for a number of years, there has been no indication that their transmissions create health problems. The universal belief has been that the transmission waves are very narrow and do not disperse enough radiation to create any health problems, according to Lewis Slesin, editor of "Microwavs News," a newsletter based in New York.

In addition, the Federal Communications Commission licenses each facility. Before licensing a facility, the FCC determines if the facility will raise local radiation levels above those considered safe, according to an FCC spokesman. The FCC approved the Vernon facilities.

### Vernon officials side with vendors

Thus far, Vernon municipal officials have sided with the vendors. The citizens group has objected to the towers' locations, which are within a few blocks of four elementary schools. The city plans to open another elementary school in the tower areas. "The zoning board does not believe that there is a problem with the facilities," Kreindler noted.

Archie Miller, manager of spacecraft operation at the RCA facility, stated, "My six children have gone to the Vernon schools. I would not send them to school there if I believed that there was a health problem."

Evidence seems to indicate that there is a health problem in Vernon, however, according to Slesin. "The question is, 'Are the health problems related to the microwave facilities?' " he said. "There seems to be no other obvious reason, such as a waste dump, for the problem."

Miller claimed that Vernon's radiation level is very low. "Radiation levels are much higher in Manhattan," he asserted. He noted that RCA has facilities similiar to those in Vernon in cities throughout the U.S., including Los Angeles, Houston and Atlanta.

## NEWS SUMMARY

A Mississippi DP agency took the plunge by being the first user of the Amdahl 5868 and found that its bold maneuver paid off/4

Prime Computer announced that Primix, its implementation of AT&T's Unix System V, is available for Prime 50 series minicomputers with the Primos operating system/7

Hewlett-Packard blamed a 10% drop in profits on the current economic slowdown, while Perkin-Elmer raked in a 13% increase in revenue/8

Blue Cross/Blue Shield is pulling together 20 years' worth of data entry equipment to handle its immense data capture task/10

Informatics General shareholders rejected a buy out bid from Sterling Software by voting to keep Informatics' chairman and director on the board/12

Microcomputers were key in the U.S. Postal Inspection Service's investigation of E. F. Hutton's check-kiting operation/13

A survey finds that a majority of companies know what systems are necessary to provide business-oriented management information — but only 5% of the firms have them installed/14

Divestiture has effected change in AT&T's data processing departments/15

Legal experts warn that computer printouts are not always allowable as evidence in court/19

An office of the U.S. Treasury Department has issued an enforcement order against a data processing service bureau/23

The Federal Communications Commission gives the green light to former Bell operating companies to upgrade Centrex features/24

The U.S. Department of Agriculture will offer electronic transmission of its farm reports to commercial information vendors/28

**IN DEPTH**
Strategic vision/ID/1

Washington Update/16
International Report/29
Call for Papers/32
Calendar/34

**EDITORIAL/36**
**SOFTWARE & SERVICES/41**
**MICROCOMPUTERS/47**
**COMMUNICATIONS/57**
**SYSTEMS & PERIPHERALS/63**
**COMPUTER INDUSTRY/71**

# ADR INVENTED MIGRATION SOFTWARE SO YOUR COMPANY CAN MOVE AHEAD WITHOUT FALLING HOPELESSLY BEHIND.

*"Next time Bigelow, look before you quantum leap!"*

If your company is growing, you've probably realized your old data base management system (DBMS) just can't do all the things you need it to do. It takes too long to write programs, it won't give you the information management needs and it's nearly impossible for end-users to figure out how to use. So it's time you moved to a new DBMS.

But conversion is like trying to change a tire on a moving car. It requires that you practically rebuild your entire data processing system from scratch and maintain your existing services while doing so. And the applications backlog, the very thing you hoped this new technology would reduce, ends up growing bigger in the process.

That's why we invented Migration Software—software that automates the awesome conversion process.

With the new ADR/DL1 TRANSPARENCY™ and the ADR/VSAM TRANSPARENCY™ you can migrate from your existing DBMS to our high performance relational DBMS, ADR/DATACOM/DB®, and your existing applications will run exactly as they did before. Without modification. At last, you can convert without having to rewrite all your applications.

ADR Migration Software also reformats your existing data. Automatically. And the ADR/DL1 TRANSPARENCY even designs your new data base. So the conversion is quick, cost efficient and virtually error free.

And now programmers can use powerful 4th generation productivity tools like ADR/IDEAL®, relational query languages like ADR/DATAQUERY®, and decision support systems like ADR/EMPIRE®. And even end-users have easy access to mainframe data through their own personal computers, using ADR/PC DATACOM®.

If you're ready to move up to the new relational technology, mail us the coupon. Or call 1-800-ADR-WARE and we'll show you how your company can grow without the growing pains of conversion.

**ADR®** WE KEEP WRITING THE HISTORY OF SOFTWARE

Applied Data Research®. Orchard Road & Rt 206, CN-8,
Princeton, NJ 08540. Or call 1-800-ADR-WARE.
In NJ, 1-201-874-9000.

☐ Please send me more information about ADR Migration Software.
☐ Please send me information about ADR Seminars.
☐ Please have a salesman call.

Name____________ Position____________
Company____________
Address____________
City____________ State______ Zip______
Phone Number____________
Computer Equipment____________

CW 5-2846

©1983 ADR

# First user of Amdahl 5868 finds software advantage

## Usually conservative Miss. agency takes system plunge

By Jeffry Beeler
CW West Coast Bureau

JACKSON, Miss. — "We tend to be a fairly conservative organization," according to Alex Epperson, computing center director for the state of Mississippi's Central Data Processing Authority (CDPA).

"Being the first ones to install a new system is not something we usually like to do. We like to let other people take the risks and find out where all the problems are."

Recently, however, the CDPA departed from its customary conservatism and did something comparatively radical. On May 6, the organization officially became the first commercial user of Amdahl Corp.'s 5868, the smaller of the two multiprocessor members of the vendor's 580 series of IBM-compatible CPUs.

What made the installation doubly adventurous for the CDPA was its keen awareness that it was acquiring a mainframe with a less than spotless track record. In May 1984, fewer than three months after the 5868's introduction, Amdahl announced an indefinite deferral of all shipments of both its multiprocessor models, which include the top-of-the-line 5880.

The delivery delays made Epperson and his associates think twice about becoming guinea pigs for the previously unused 5868. "They [the deferrals] definitely concerned some of us," he recalled.

Thus far, the CDPA apparently feels no regrets about its unprecedented decision to boldly go where no other Amdahl user has gone before. The reasons for the organization's initial optimism are manifold. First, as a multiprocessor model built around two Amdahl 5850 processors, the 5868 reportedly satisfies the CDPA's critical need for system redundancy. "No single component failure will cause the whole system to stop," Epperson said.

Second, the 5868 roughly equals the computing power of an IBM 3081 Model KX and thus greatly surpasses the combined performance of the two Amdahl 470 series processors it replaced.

But because it runs in single-image mode, the multiprocessor mainframe can simultaneously support two sets of system programs with just one software license. Previously, the CDPA paid for two such licenses, one for each CPU.

"

*'Being the first ones to install a new system is not something we usually like to do. We like to let other people take the risks and find out where all the problems are.'*

— Alex Epperson
Mississippi's Central Data Processing Authority

By eliminating unnecessary second-site license fees, the 5868 can pare the organization's software expenses by about $40,000 per year, Epperson said.

As its name suggests, the CDPA furnishes centralized computing services for all the state of Mississippi's government agencies. In all, the organization is said to support some 60 end-user entities.

Until early this month, the CDPA relied entirely for its information processing resources on two older model Amdahl CPUs — a 470V/6 and a 470V/8. But like most other large MIS centers, "we have recently experienced tremendous growth in demand for DP services," Epperson said. The increased burden, in turn, eventually outstripped the two existing processors' available capacity.

Late last year, Epperson and his coworkers began looking for potential 470 series replacements. They deliberately limited their search to mainframes that could be readily upgraded to an even larger model and that could continue to operate despite a major component failure.

"We're a 24-hour-a-day, seven-day-a-week operation," Epperson explained. "We can't ever afford to be down."

The CDPA also required its prospective acquisition to support Extended Architecture (XA). "We expect to begin converting to MVS/XA in a month or so because our virtual storage is very constrained," Epperson said. "We currently run six CICS regions plus two CICS test regions [under MVS/SP 1.3] and have little room for future growth."

To pave the way for the proposed XA upgrade and to overcome its severe storage limitations, the CDPA early this year began issuing formal requests for CPU proposals. The invitations brought bids from several hardware suppliers and prompted the systems agency to evaluate assorted processor models, including the IBM 3081 Model KX, 3084 Model Q and 3084 Model QX as well as the Amdahl 5867 and 5880.

In the end, though, Epperson and his colleagues rejected all the other options in favor of the 5868, which can be upgraded to the 5880 and which reportedly provides better backup capabilities than the 3081. For the CDPA, the smaller Amdahl multiprocessor also offers a more appropriate level of price/performance than the 5880 or 3084, Epperson said.

# Calif. sets ergonomics rules

SACRAMENTO, Calif. — Just one day after an ergonomics bill died in the California legislature earlier this month, the California State Office of Information Technology issued ergonomics guidelines for competitive bidding requirements on VDTs and office equipment.

The guidelines will be included in bidding specifications for equipment for state agencies, according to Joseph Pujals, DP manager for the Office of Information Technology.

VDT screens, keyboards and office furniture are addressed in the guidelines, which apply to equipment used by one operator for four or more hours a day. Bidding requirements will include requests for screen brightness and contrast controls, glare reduction screens, an adjustable terminal base and a minimum dot matrix composition of 5 by 7 pixels, Pujals said. Office chairs must be adjustable for height and backrest positions, the guidelines said. Desks and tables must also include adjustable features, according to Pujals.

California is the fourth state to implement guidelines on VDT purchases, following New Mexico, Massachusetts and Wisconsin.

## CORRECTIONS

Esca-DSS, the IBM Personal Computer-based decision support system announced recently from Esca, Inc. is available immediately, not in the fourth quarter [CW, May 6].

Due to incorrect information supplied by the vendor, a March 11 product announcement stated that Data 3 Systems, Inc.'s MRPS 38-A Financial Accounting Package is available for the IBM System/34 and 36 minicomputers and that the package costs $94,000. Data 3 Systems' financial accounting package is available only for IBM's System/38 minicomputers for a price of $35,000.

The correct address of Execucomp, Inc., maker of Name Base software, is 620 S. Belmont St., Indianapolis, Ind. 46221.

ACF2 was developed and is maintained and supported by SKK, Inc. of Rosemont, Ill. [CW, April 22]. The software security product is marketed in the U.S. and Canada by the Cambridge Systems Group, Inc., which is headquartered in Los Altos Hills, Calif.

A recent report of an International Data Corp. survey of the IBM 3270 marketplace [CW, May 13] incorrectly stated that shipments of 3270-type terminals would start to decline in 1986. IDC predicts the growth of the 3270 market will begin to decline in 1986.

The correct name of the vendor of Protocol/Online [CW, April 22] is Software Info Services, Inc.

Second-class postage paid at Framingham, Mass., and additional mailing offices.
*Computerworld* (ISSN-0010-4841) is published weekly, except: January (5 issues), February (5 issues), March (5 issues), April (6 issues), May (5 issues), June (5 issues), August (5 issues), September (6 issues), October (5 issues), November (5 issues) and a single combined issue for the last week in December and the first week in January by CW Communications/Inc., 375 Cochituate Road, Box 880, Framingham, Mass. 01701.

Copyright 1985 by CW Communications/Inc. All rights reserved.

*Computerworld* can be purchased on 35 mm microform through University Microfilm Int. Periodical Entry Dept., 300 Zeeb Road, Ann Arbor, Mich. 48106. *Computerworld* is indexed: write to Circulation Dept. for subscription information.

PHOTOCOPY RIGHTS: permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CW Communications/Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 21 Congress Street, Salem, Mass. 01970.

Permission to photocopy does not extend to contributed articles followed by this symbol. ‡

Special requests for reprints and permissions only should be addressed to Nancy M. Shannon, CW Communications/Inc., 375 Cochituate Road, Box 880, Framingham, Mass. 01701.
ISSN 0010-4841/85 $3.00 + $.50. $2.00 a copy: U.S. — $44 a year; Canada, Central & So. America — $110 a year; Europe — $165 a year; all other countries — $245 a year (airmail service). Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin.

ABP

POSTMASTER: Send Change of Address to *Computerworld*, Circulation Department, P.O. Box 1016, Southeastern, PA 19398-9984.

# SMART COOKIE

## Like you, SyncSort DOS is cut from a special mold.

**Call (201) 568-9700.**

**It's healthy for your system.**

One thing about smart cookies, they can spot each other a mile away.

While they don't flaunt their derring-do, they quietly know they're the best at what they do. Because substance shows through. Every time.

Especially when the going gets tough. And rough. As it often does in a DOS environment.

For example, a smart cookie doesn't crumble under the pressure of too many programs and too few programmers.

A smart cookie doesn't waste dough — but picks and chooses the right ingredient to keep production on the rise.

And sometimes, even, a smart cookie has to be a mighty tough cookie. That means being on the job constantly. Keeping things running and humming. Without draining vital resources.

All of which brings us to our smart cookie: SyncSort DOS. A cut above the rest if you ever saw one. Check these delicious advantages.

**Better Performance**

Pop one into your system and you'll see a mouthwatering difference. Immediately. SyncSort DOS will give you performance improvements like those shown in the chart on the left.

And performance features such as:

- Automatic Secondary Allocation. With this feature your sorts will never run out of disk space, i.e., no "sort capacity exceeded" messages.

**Better Features to Improve Programmer Productivity**

As you begin to digest SyncSort DOS, you'll find it more and more to your liking. With ingredients that cut down to size the amount of programming time going into applications.

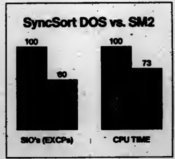
- **SortWriter** — A powerful tool that can produce extensive reports as a by-product of your normal sorting — without user exits and the associated programmer investment. Headers, trailers, total and sub-total capabilities provide flexible formatting.
- **Record Formatting** — Powerful features like INCLUDE/OMIT, INREC/OUTREC, SUM and others — with capabilities like data conversion, editing, insertion of literals.
- **Multiple Output** — From a single sorted file, you can create multiple files and reports. Each can include the same or different data as determined by INCLUDE, OMIT, OUTFIL or OUTREC parameters.

**Better Customer Service**

Still another sweet advantage of SyncSort DOS: help is always there when you need it. 85% of all requests for service are resolved within 24 hours. We always rise to the occasion.

The moral to this story: smart cookies are quick to reject half-baked solutions in favor of SyncSort DOS. Call us for a demonstration. Once you get a taste you will be hungry for more.

**SyncSort DOS -**
**One smart cookie deserves another.**



syncsort
INC.

Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

## GENIX from page 1

"We had to teach our people that there is now a customer on the other end, not just a user from another department," said Paul J. Hachko, Genix manager of operations. "That training was at times as basic as not letting the phone ring more than three times before answering it."

The addition of accounting, marketing, sales and advertising departments differentiated Genix from its former status, but the transition within its data processing operation itself has been no less profound. "We have made a definite shift from systems software to applications software for our users and all that that entails," said Harry B. Matthews, systems programming manager. "We have to be a lot more attentive to what's on the market. As a DP department, we would meet with the other departments probably once a year, and 90% to 95% of the software for that year would already be in place. Now the customers want to know what's available for their needs, and we have to meet [those needs], Matthews said."

Hachko, left, and Matthews

Applications development has become a major focus at Genix, and software packages such as Cincom Systems, Inc.'s Mantis and BGS Systems, Inc.'s Best/1 have been purchased to promote it. "In the past, we only did the nuts and bolts stuff for our users," said Cecil Sexton, director of operations. "Applications development was handled by National Steel's management services, not in the data center."

Genix officials claim that such added responsibility, as well as the need to turn a profit, have sparked some unexpected ideas from the DP staff. Huchko has personally volunteered to boost the Genix effort to woo federal government business, and one programmer is working on his own data base management software for large corporate building maintenance budgets. "We were pleasantly surprised at how quickly the entrepreneurs surfaced around here," said Joseph Murphy, vice-president of operations and technology. "People can do things that they were never able to do before."

Autonomous budget control has created both new responsibility and opportunity for Genix. While the former cost center has had to instill bottom-line awareness in every employee, Genix now has much more flexibility in upgrading both hardware and software.

"It used to be quite an ordeal to get new equipment," Matthews said. "Now, with our customer orientation, we can tell them, 'Sure, we can do that; here's the price.' Before, our hands were tied because it didn't fit into our budget."

Microcomputers used to be a scarce commodity in National Steel DP. Now the IBM mainframe shop also includes 12 AT&T 6300 Personal Computers, four Digital Equipment Corp. 350 Professional Computers, two Apple Computer, Inc. Macintoshes and other micros. "Every customer seems to ask our advice on uploading or downloading from [personal computers]," Matthews said. "What education could we offer if we didn't use them ourselves? We had to get on board quickly, and we have."

### Customers free to choose DP service

Genix President Raul Pupo pointed out that Genix's six customers under the National Intergroup corporate umbrella (National Steel, National Aluminum Corp., National Mines Corp., Bull Moose Tube Corp., Distribution Group Co. and the parent company itself) are free to choose any data processing service they wish, but they all have stayed with Genix. The data processing firm's current outside customers are Philadelphia Electric Power Co. and Comsi, Inc., a Chicago-based software development company.

Pupo is seeking more firms like Comsi for Genix's initial target customer base. "We want to establish a track record with large software developers to help sell ourselves to other [customers]," Pupo said.

Genix expects to break even in its first year, although Sexton admitted that the transition from a National Steel DP department to a newly named contract business presents a marketing problem. "It is a pain," he said. "People think we're a small start-up, but we've been doing data processing for 20 years."

---

## STEEL from page 1

But attracting employees required more than an ad in the local paper. When employees voted to buy the Weirton Steel Division, they also agreed to take an overall 32% pay cut. That pay cut was clearly a disadvantage in attracting new employees, especially since the main targets of the hiring spree were displaced National Steel DP workers familiar with the operations at Weirton Steel.

"I worked for National Steel and had the opportunity to take over [at Weirton Steel[ as manager of operations and software, so I came aboard," noted Bernie Waters, manager of operations and systems in Weirton Steel's management services group. "A few others came over from National Steel and had the chance to move into promotions in other areas. We brought some of the better technical people [from Weirton's[ applications area into software. The operations staff was already a member of the bargaining unit, so they stayed. And some of the supervisory people came from National Steel. So we built the data center around that core of people."

After finding enough DP professionals to accept positions with the newly formed Weirton Steel, the next step was to establish a data center.

"Naturally, since [National Steel] was selling the division, [it] wanted to move the data center out of here and up to Pittsburgh. In the transition, [it] left us an IBM 3033 AP, software and some disk drives. We took over running that as [National Steel was] moving out," Waters recalled.

Waters

Weirton Steel basically rented the 3033 from National Intergroup for use as an interim system until it could design its own data center. The software left behind by National Steel had been tailored for use in a much larger, more diversified corporation. Furthermore, much of the National Steel tailored software had become outdated.

"Since we were starting fresh," Waters said, "we decided to go with later models instead of keeping the 3033s. We were looking at going with one 3081 but decided we'd rather have two [machines]. So we got two 3083 Model BXs, which are about [6 million instructions per sec.] machines, with 16M bytes of memory for redundancy. We are running [them] 24 hours a day, seven days a week, so we can't afford to be down. Everything is symmetrical: There are two communications controllers, and we have everything set up so that if we lose one system, we have a backup," Waters said.

Weirton's second 3083 is also used for production work and serves as a development processor for the company's TSO users, Waters noted.

In making the switch from the 3033 AP to the two 3083s, Weirton Steel decided to migrate from IBM's MVS/SP operating system to the newer MVS/XA operating system.

### Logical time for XA conversion

"We said, '[Extended Architecture (XA)] is coming, why not do it now so that when we have these [machines] loaded up we don't do the XA conversion and disrupt everything we are doing?' It seemed like a logical time to [make the conversion]. We didn't need it for performance increases or virtual storage relief or anything like that," Waters said.

But migrating to MVS/XA was only part of Weirton Steel's software challenge. The newly hired DP staff had to sort through all the software left behind by National Steel and determine which packages were usable.

"In the case of the purchased packages, we replaced about 80% of them with equivalent or better software to meet our needs," said Anthony J. Santilli, director of management services at Weirton Steel. "Of the internally developed software [National Steel] left us, we took what it had, cleaned it up and eliminated the bells and whistles," Santilli said.

With the evaluation process completed, Weirton Steel now considers itself ready to begin developing some of its own software to perform functions that were not available when National Steel was running the Weirton mill.

### Develop 'PIN'

"We are now in the process of developing an environment that previously did not exist at Weirton, which we are calling our Process Information Network [PIN]. We are going down to the mill floor, and we are going to attempt, over an extended period of time, to acquire mill floor information [stored in Digital Equipment Corp. PDP-11-based process control systems] and turn it around to those people involved in the production of steel, and assist them in getting the product out the door," Santilli said.

Once the PIN is established, Santilli said, control of it will be turned over to the corporation's operations department, although the MIS department will probably maintain the systems.

Santilli said a major emphasis in the Weirton Steel management systems department has been to maintain contact with the intended users of systems.

"I see a lot more acceptance of the role of management systems here than I did at National Steel," Santilli added. "When someone has thrown stones at you for years because you didn't do the job well, which is the environment most MIS organizations get into over time, it becomes very difficult to acquire things. We came in, we had a clean slate, we asked for something, they gave it to us, we did it. We basically have a good reputation. We have been accepted by our management. Until we fall flat on our faces, we will get all the support we want to get."

Stuff it to JES

CICS, DSPrint, IMS, and SAS* Reports

The Dynamic Report System provides a bridge between on-line systems and the JES report queues. Move it all to JES and gain performance along with centralized report distribution. Let JES account for, archive and distribute reports to 327X printers, local printers, PCs, plotters, microfilm devices and 5210s.

And Let JES Distribute Your 328X Reports

VPS, the VTAM/TCAM Printer Support subsystem places 3280/328X printers, PCs, plotters, 5210s, and word processors directly under JES. These non-dedicated devices become JES RJE print stations. VPS expands JES's local and remote hardcopy alternatives as it reduces real network costs and complexity. Ask our 400 users and their 20,000 printers.

LRS

Levi, Ray & Shoup, Inc.
P.O. Box [illegible] · Dallas, TX [illegible]
DALLAS (214) [illegible] · TELEX [illegible]
*A registered trademark of the SAS Institute

# Prime adds Unix environment for 50 series users

By John Desmond
CW Staff

NATICK, Mass. — Prime Computer, Inc. joined the growing body of superminicomputer vendors offering a Unix standard with its announcement last week that AT&T's Unix System V is available for its 50 series minicomputers running Primos, the company's mainstay operating system.

Prime's offering, dubbed Primix, runs co-resident with Primos. Users can switch back and forth between the two operating systems so that Primix users have access to applications written for Primos, a Prime spokesman said.

The kernel of Primos Release 19.4.2 was modified to include Unix functions, according to Ross Summers, systems and product marketing manager at Prime. Kernel support provides for file system stability and virtual memory paging support for the direct execution of large programs.

Prime has been working since June 1983 with Human Computing Resources Corp. of Toronto, a Unix systems house, to develop its Unix offering.

### Primix features

Primix includes Prime's C compiler, source-level debuggers, Emacs interactive display editor, data management and computer-aided design and manufacturing utilities and communications capabilities, including Primenet networking software.

Primix contains both the Bourne shell command line interpreter developed at Bell Laboratories and the C shell developed at the University of California at Berkeley. Primix also contains Unix utilities used for program development, communications and text processing.

The Primix hierarchical file system is integrated with that of Primos, so that files and directories created under one operating system can be accessed from the other. File system integration makes it possible for system users to choose between the two operating systems' file security systems.

Primix is available on all 50 series systems, 2250 through 9950, and requires Release 19.4.2 or later of Primos.

In the initial offering, one version will support up to 16 simultaneous users, while another version will support up to 32 users. Prime said a future version will support up to 64 simultaneous users.

Primix licenses are priced according to hardware used and number of simultaneous users supported. Prices range from $7,000 for support of 16 users on a Prime office system to $15,000 for 32 users on a Prime computer room system. Shipments are scheduled to begin in July.

### Implementation is protection

One analyst noted that Prime's implementation of Unix is an effort to protect the company's investment in its proprietary operating system and applications software by satisfying users who are demanding Unix features.

But Damian Rinaldi of International Data Corp., a Framingham, Mass.-based market research firm, questioned whether in its efforts to achieve co-residency, Prime has made trade-offs that could affect system performance.

"I suspect [Prime] had to make some trade-offs, but the marketplace will determine whether it made the right decisions," he said.

Prime's Summers said trade-offs were minimal, because both Primos and Unix had their origins in MIT's Multics project with Bell Laboratories and General Electric Co.'s Computer Division in the late 1960s.

Both Digital Equipment Corp. and Data General Corp. first offered Unix implementations atop their proprietary operating systems and later offered Unix in native mode. Summers said Prime has no plans to follow in those firms' footsteps by offering Unix in native mode.

"What's important in the long run is to adhere to the operating system interface as a standard," he said. "How you offer the standard is immaterial."

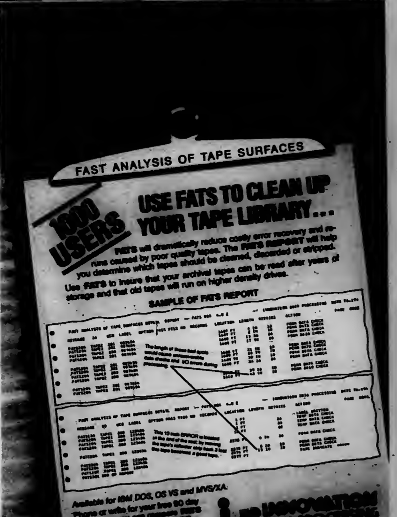
### Positive reactions

A spokesman for a New York-based Unix users group saw Prime's entry into the Unix world as positive.

"With the last few of these [hardware vendors] falling into place, it seems like Unix is destined to stay with us for a long time. Generally, it seems to be the answer [for] the end users as far as freeing them from the proprietary nature of operating systems," said Keith Ehrenstark, a member of the Unigroup of New York, Inc. board of directors, and marketing manager for Structured Methods, Inc. of New York, a Unix training and consulting firm.

George Elko, district staff manager at New York Telephone Co. in New York, a large Unix user, said, "As an operating company formerly part of the Bell system, we like to see System V branch out. We are open to any vendor who offers good price/performance and support. As a Unix user, I like the fact that more and more hardware manufacturers are getting into Unix."

Prime is located at Prime Park, Natick, Mass. 01760.



FAST ANALYSIS OF TAPE SURFACES

1000 USERS

USE FATS TO CLEAN UP YOUR TAPE LIBRARY...

FATS will dramatically reduce costly error recovery and reruns caused by poor quality tapes. The FATS REPORT will help you determine which tapes should be cleaned, discarded or stripped.

Use FATS to insure that your archival tapes can be read after years of storage and that old tapes will run on higher density drives.

SAMPLE OF FATS REPORT

The length of these bad spots would cause unacceptable data checks and I/O errors during processing.

This 13 inch ERROR is located at the end of the reel; by moving the tape's reflector strip back 3 feet this tape becomes a good tape.

Available for IBM DOS, OS VS and MVS/XA.

Phone or write for your free 90 day trial now so you can compare FATS to your OFFLINE [illegible] EVALUATOR or reports generated by [illegible] and [illegible].

INNOVATION DATA PROCESSING
970 Clifton Ave., Clifton, NJ 07013
201—777-1940

# Profits spectrum: HP loses, PE gains

Hewlett-Packard Co. last week reported that second-quarter profits declined 10% from those of the corresponding period a year earlier. The company said it expected the current economic slowdown to continue for several months and reported that incoming domestic orders for the second quarter were down 6% from the year-earlier level.

In an opposing vein, Perkin-Elmer Corp. overcame a slump in semiconductor equipment orders to post a 55% third-quarter profit hike on a revenue increase of 13%.

John A. Young, president and chief executive officer of HP, said the second-quarter results "reflect the general sluggishness being experienced by businesses throughout the U.S." The company posted profits of $129 million, or 51 cents per share, down from year-earlier profits of $147 million, or 57 cents per share. Revenue for the quarter was $1.68 billion, up 10% from second-quarter revenue of $1.52 billion a year ago.

In an apparent indicator that third-quarter results may show no improvement, the company said incoming orders for the second quarter increased only 1% over last year's second quarter to $1.61 billion. Domestic orders were off 6%, but international orders were up 12% compared with a year earlier, according to the firm. However, Young said the company has also noticed growth moderation in international markets.

At Norwalk, Conn.-based PE, third-quarter profits were $21.6 million, or 49 cents per share, compared with $13.9 million, or 31 cents per share, reported a year earlier. Revenue was $340 million, up from $301 million, and the company reported that increases in its analytical instruments and computer segments offset a decline in semiconductor equipment sales.

## VAX from page 1

8600 and the Microvax II, DEC President Kenneth Olsen remarked simply that the Microvax itself "is the middle."

The Microvax II is built around two internally developed 32-bit very large-scale integration chips. The Microvax 78032 microprocessor implements a subset of the VAX instruction set and provides demand-paged virtual memory management, DEC officials said. A matching floating-point chip, the Microvax 78132, typically gives 85% of the 11/780's floating-point performance. System clock speed is 20 MHz.

The supermicro typically provides 70% to 110% the throughput of the 11/780, with most applications in the 90% range, according to Jesse Lipcon, Microvax II product manager.

### Limitations

Lipcon added that "there are some things the [11/780] can do that the Microvax can't" — primarily the ability to work in Vaxclusters — and there are restrictions on supported peripherals.

DEC Technical Group Vice-President Edward Kramer said that clustering support was not added because of expense issues and added that Decnet will provide many of the same functions. As more powerful Microvaxs become available, Vaxclusters will be supported.

Throughout the presentation, DEC officials emphasized the VAX family's potential for distributed computing, with machines running identical software at locations ranging from end-user desks to central computing facilities.

Four Microvax II configurations will be offered, ranging from an $18,840 single-user model with 2M bytes of main memory and a 31M-byte hard disk drive to a $43,780 16-user system with 5M bytes of main memory, 213M bytes of disk storage and a 95M-byte streaming cartridge tape drive. The single-user system is being delivered now, while other models will become available in June and July, DEC said.

The Micro-VMS operating system is sold separately, with prices beginning at $2,000, plus $1,000 for media and documentation, for a two-user license. The Ultrix-32m operating software, based on AT&T's Unix, also is available, with prices starting at $1,000 for a two-user license.

The Vaxstation II, a graphics workstation based on the Microvax II CPU, also was introduced, with deliveries set for July. A starting system with 2M bytes of memory, bit-mapped video graphics, a 19-in. monochrome monitor, dual floppy disk drives, a 31M-byte Winchester disk drive and Micro-VMS software is priced at $26,500. DEC will introduce a color version of the workstation by July, said Ronnie Morvay, manager of Vaxstation product management.

The new machines essentially will replace the Microvax 1 and the Microvax I-based workstations, DEC officials said. A field upgrade kit for the Microvax I, available now, costs $9,700.

### Compact optical disk system

Among new storage products, DEC rolled out a compact read-only optical disk system for the Microvax family that stores 600M bytes, costs $2,195 and is expected to ship in July.

The company claimed that it will be the first major computer maker to offer an integrated system storing data on a single optical disk. DEC will handle disk mastering, with prices starting at about $200 per disk in quantities of 50.

DEC also unveiled the 95M-byte Model TK50 streaming cartridge tape drive, priced at $3,450, and the 71M-byte Model RD53 hard disk drive, which will cost $3,350.

DEC is located in Maynard, Mass. 01754.

OPERATING LEASE PROGRAMS

OFFER SHORT-TERM LEASES TO CUSTOMERS. SELL EQUIPMENT TO LPI. RETAIN REMARKETING CONTROL. SHARE IN RESIDUALS AFTER LPI INVESTMENT IS REPAID. STRUCTURE APPROVED BY MAJOR ACCOUNTING FIRMS AS SALE UNDER FASB 13.
OVER $1 BILLION IN PROGRAMS ARRANGED

CONTACT: MARK S. BAZROD, PRESIDENT
LEASE PROGRAMS INC.
2 GLENHARDIE CORPORATE CENTER
WAYNE, PA 19087 215-687-4434

# Dema conference set

WASHINGTON, D.C. — The Data Entry Management Association (Dema) will hold its Ninth Annual Data Entry Management Conference Sept. 9 to 11 at the Washington Sheraton Hotel here.

The conference theme is "The Year of Discovery," and topics include harnessing the personal computer explosion, maintaining data processing integrity, dealing with VDT health issues and motivating employees. Other topics include networking, service bureaus of the future, incentive systems, word processing and on-line and distributed processing.

The conference costs $465 for Dema members and $520 for nonmembers. A $40 discount applies before June 18, and a special $531 price is available for nonmembers who would like a one-year Dema membership. More information is available from Dema, P.O. Box 16711, Stamford, Conn. 06905.

©1984 Comshare

> “In short, System W is a mature, well-rounded product supported by years of experience in the decision support field and by a company whose reputation is above reproach. Therefore, without hesitation, we would recommend that anyone in the market for a state-of-the-art decision support system not overlook System W in their evaluation.”

*— Data Decisions, Cherry Hill, New Jersey, September, 1984.*

More than 100 top corporations chose Comshare's System W decision support software in the last 18 months. Teamed with IBM mainframes, System W untangles the information management challenges that face business professionals. Especially the big payoff ones like performance reconciliations, problem analysis, forecasting and electronic management reporting.

*Data Decisions*, an independent research and publishing firm, has evaluated System W, too. And it says that companies seeking a competitive edge in business planning and analysis should put System W to the test.

You should read the *Data Decisions* evaluation before your company makes a major investment in decision support software.

For your *free* copy of the full *Data Decisions* report, call Chris Kelly at Comshare toll free: 1-800-922-SYSW (in Michigan call: 313-994-4800). Or mail your business card to: Comshare, P.O. Box 1588, Ann Arbor, Michigan 48106.

SYSTEM W DECISION SUPPORT SOFTWARE

**COMSHARE®**

For decision makers who need to know their options now.

# Mass. Blue Cross' data entry systems span 20 years

**By Donna Raimondi**
**CW Staff**

BOSTON — Blue Cross/Blue Shield of Massachusetts' data entry equipment spans more than 20 years and several layers of technology, but it is all geared to the same purpose: production.

"We want as automated a data capture as possible," said John Kolstad, product manager at Blue Cross/Blue Shield of Massachusetts. Blue Cross pays health care claims and collects money to pay claims, he said, referring to his company's job as that of an intermediary in the claims collection process.

The company has IBM 3083 Model B and 3081 Model G computers, as well as Honeywell, Inc. DPS 5 and DPS 8 mainframes, he said. A Nixdorf Computer Corp. Model 480 minicomputer and Honeywell's DPS 6 minicomputer with Honeywell's Data Entry Facility II screen builder are in a central location and form the basis for a shared processor system for claims and some actuarial data entry, Kolstad said.

For uncomplicated data capture applications, such as premium collections from large corporations, Blue Cross/Blue Shield instituted optical character recognition (OCR) back in the 1970s, a method that has worked out well for that purpose.

But when the company tried OCR for claims, it did not work at all, Kolstad said. The volume of data on even one claim is substantial, he said. Often, some data is handwritten while other data is typed on a variety of typewriter fonts, and all of this is too complex for the OCR technology, he said.

### Swapping tapes, diskettes

Blue Cross/Blue Shield's DP people got together with physicians and hospital staffs to work out an automated data entry system for claims. They decided to swap back and forth the tapes or diskettes on which the health care organizations load their claim data, Kolstad said.

"We'll either pay, suspend or reject [the claim], and we return the results on the same media [that] they sent us," he said. This method has increased efficiency, as it is now clear to the providers and to Blue Cross/Blue Shield who is responsible for errors in the tapes or diskettes, he said.

Large account subscribers send in their enrollment data that way now, too, Kolstad said. The management of the 300 tapes per week that result from this method is overdue for improvement, he added. The tapes must be carried, mounted and controlled, all of which is very time consuming.

Kolstad is in the process of connecting the Honeywell DPS 6 minicomputer to the IBM mainframes by using Honeywell Systems Network Architecture emulation packages, he said, in order to communicate the files directly into the system over communications lines using IBM's Synchronous Data Link Control between systems.

Kolstad's plan calls for replacing the Nixdorf minicomputer with another Honeywell DPS 6. He said he wants to do away with the central location of the minis and distribute all work to end-user locations.

Kolstad is also in the process of developing his CICS environment — formerly a Vsam disk file system — into an IBM IMS data base system in order to have more control over information through programming, he said. On the Honeywell mainframes, he uses a homegrown remote transaction entry system with Honeywell's IDS1 data base, he said.

Kolstad

The company still uses about 40 card-punch applications, a carryover from the 1960s and 1970s, Kolstad said. IBM's 026, its original keypunch machine; the replacement IBM 129, a keypunch with about 80 characters of memory; and various early data entry systems from other vendors are still used for old master card files, but nobody actually punches the keys anymore, he said. Operators key in the 80-char. record data to disk, and then the data is switched to the key machines via a black box device, he added.

The old card systems are used mostly in the actuarial departments for specialized "what-if," nontime-dependent reports based on master card files, Kolstad said. Users cannot control the preparation of data as efficiently as they can with more modern equipment, as the company is planning to eliminate the cards and make major improvements to those applications, according to Kolstad.

The biggest problem for Blue Cross/Blue Shield's information systems group is keeping up with changing technology, Kolstad said.

He said he visits other user sites, joins professional organizations such as the Data Processing Manager's Association and uses Atlantic Software, Inc.'s SDM/70 series of guides to design, develop and install data processing systems in the process of upgrading the company's data capture systems.

ARE IBM'S AND WANG'S

| Vendor Supplied Features | Data General MV Family | IBM System/36 Family | WANG VS Family |
|---|---|---|---|
| Office Product | CEO | Personal Services/36 | VS Office |
| First Volume Delivery | 7/82 | 7/85 | 3/85 |
| Installed Sites | 3000 + | 0 | 50* |
| Integrated Word Processing | yes | promised | promised |
| Integrated Query | yes | promised | promised |
| Integrated E-Filing | yes | promised | promised |
| Integrated Spreadsheet | yes | no | no |
| Consistent User Interface | yes | promised | no |

| Vendor Supplied Features | Data General MV Family | IBM System/36 Family | WANG VS Family |
|---|---|---|---|
| INTERRUPT from WP | yes | promised | no |
| Industry Standard LAN (IEEE 802.3) | yes | no | no |
| UNIX™ | yes | no | promised |
| Database Mgmt.<br>Relational<br>Codasyl | <br>yes<br>yes | <br>no<br>no | <br>yes<br>no |
| High Level Application Languages | 12 | 4 | 6 |
| Integrated with laptop PC | yes | no | no |
| Maximum Number Local Users | 100 + | 36 | 100 + |
| 32 Bit Architecture | yes | no | yes VS 65,85,100,300<br>no VS 15,25,45 |

Data General delivers today what IBM and Wang promise tomorrow.

*According to INFOWEEK 3/4/85

# Technology upgrades increase duties of data entry clerks

BOSTON — Data entry clerks are forced by the sophistication of today's interactive data capture systems to know more about their company's business than they had to know 10 years ago. To ensure clerks' productivity, programmers and managers must be aware of data capture efficiency factors.

In an on-line, interactive CRT-based data capture system, the person-to-machine interface has forced operator training to change dramatically in order to maintain sufficient levels of ability, said John Kolstad of Blue Cross/Blue Shield of Massachusetts. A by-product of this increased training and responsibility is job enrichment for the clerk, he added.

When a clerk completes the fields in a fully formatted CRT screen, he must be able to deal with errors that slow down the process, Kolstad said. Clerks are not keying in a machine-like fashion anymore, he said.

Designers of the screen formats should realize that unnecessary data, awkward positioning of fields and slow detection of errors can retard the data capture process considerably, he said.

"You don't want keyers to be keying in awkward fashion," he said. The format should lead the operator from left to right, from top to bottom — the fundamental design of a screen format. If something is keyed incorrectly, it is important to catch the error at that point instead of after more fields have been filled in, he added.

### System response time important

The system's response time is very important, Kolstad said. Studies show that if response time is slower than three seconds, the clerk's attention will be on something else, and productivity will decrease. Cryptic abbreviations on the screen format that are different from the title on a source form introduce a margin of error or lack of understanding; so the naming of data elements is crucial, he said.

The cursor is the operator's tool, Kolstad said. The ability to navigate it easily through the screen is important.

Managers should be aware of the comfort of their data entry clerks, Kolstad said. System demands must be tailored to human beings, but the extent to which operators should be made comfortable is a management issue, he said. "There is a balance, but if you expect too much, the person can't deliver," he said.

Important considerations include the chair design, keyboard height, lighting and length of time spent in front of the system, he said. Managers should try to correlate these factors with productivity measurements to see what works for the clerks, he said.

There is a threshold that you can exceed in what you demand from operators, Kolstad cautioned. The consequences of unreasonable demands can be high turnover, inaccuracies in the data and lack of efficiency, he said.

— [illegible]

PROMISES JUST A LOT OF SMOKE?

Data General's CEO system gives you all the features for complete business automation.

When it comes to office automation, IBM and Wang would like to sell you the sizzle of future features. Features you need today. But ones they may not deliver for quite some time.

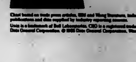
Data General's Comprehensive Electronic Office (CEO) lets you integrate your business applications with office automation functions and decision support tools such as spreadsheets, graphics and databases. So all levels of your business can work together more effectively.

We can also tie into almost every standard communication network to make your business more productive.

Our CEO system gives you all this, in addition to office automation essentials that are exceptionally easy to use.

While the rest of the world waits for IBM and Wang to supply each of these features, over 60,000 users have been sold on our CEO systems. And our support plans make sure they're using it to their best advantage.

In tomorrow's business battles, don't get burned by a smokescreen of promises. Check out Data General for total business automation solutions. For more information, call 1-800-DATAGEN or in Canada 1-800-268-5454.



Data General
a Generation ahead.

Chart based on trade press articles, IBM and Wang literature, industry reporting publications and data supplied by industry reporting sources.
Unix is a trademark of Bell Laboratories. CEO is a registered trademark of Data General Corporation. © 1985 Data General Corporation, Westboro, MA.

# Ausgraph '85 set for August

BRISBANE, Australia — The Australian Computer Graphics Association (ACGA) has announced that the Ausgraph '85 conference and exhibition will be held here August 12-16.

The third annual computer graphics and computer-aided design and manufacturing conference will cover animation and graphic arts, business graphics, exploration and mining, architecture and engineering, cartography and mapping, advertising, image processing, printing and publishing, video games and education.

Among the speakers are Carl Machover of Machover Associates and Stanley Klein, author of the "S. Klein Newsletter."

More information is available from Conference Secretariat, Ausgraph '85, P.O. Box 29, Parville, Victoria, 3052, Australia.

# Firm to release AI directory

SCOTTSDALE, Ariz. — A directory of more than 200 companies in the artificial intelligence industry will be published this summer by DM Data, Inc., an AI consulting firm based here.

The directory is expected to list firms involved in AI, expert systems, voice recognition systems, artificial vision, natural language, symbolic computing and AI programming languages.

The directory is said to include company names and addresses, contact names, product information, company sales figures by product category and a master telephone directory.

DM Data is located at Suite 100, 6900 E. Camelback Road, Scottsdale, Ariz. 85251.

# Informatics nixes Sterling's takeover bid

## Reelects members to contested seats

**By Kathleen Burton**
**CW West Coast Bureau**

LOS ANGELES — By a more than two-to-one margin, the management of Informatics General Corp. won a proxy battle with Sterling Software, Inc. at Informatics' recent annual meeting.

Informatics' shareholders spurned Sterling's cash buy-out offer by reelecting Informatics Chairman Walter Bauer and Director Clarence W. Spangle to their respective, challenged seats on Informatics' seven-member board.

In a preliminary tally completed by Informatics' auditors last week, Bauer and Spangle won 2.35 million votes, compared with 960,000 votes for Sterling Chairman Sam Wyly and Chief Executive Officer Sterling Williams. The vote represented 70% of Informatics' outstanding five million shares.

Dallas-based Sterling, which first offered $25 per share and later upped the offer to $26 per share, was seeking the election of its own protakeover directors and the defeat of antitakeover provisions.

Informatics' antitakeover fair price amendment and a "green mail" proposal designed to prevent a stock acquisition by Sterling were both defeated. According to Informatics, both proposals required that a majority of the company's outstanding stock held on March 15 be voted.

But since recent heavy trading on Wall Street caused 70% of the company's stock to change hands since that time, new shareholders were ineligible to vote, according to an Informatics' spokesman.

The firm initially had no intention of being acquired, Bauer said, but the heavy trading during the last month "indicates that our shareholders want a merger, which Informatics' board will now aggressively pursue."

Dan McGurk, head of a special

See VOTE page 13

SYSTEM 2000
DBMS

The Only Full-Function
DBMS for Your
Information Center

from the Leader

in Information
Center Software

SAS Institute Inc.
First-year Price: $12,000
Call today for a free trial.

SAS

SAS Institute Inc.
SAS Circle, Box 8000
Cary, NC 27511-8000
Telephone (919) 467-8000 X280

SYSTEM 2000 is the registered trademark of SAS Institute Inc. Copyright © 1985 by SAS Institute Inc. Printed in the USA.

# Micros play key role in detecting E. F. Hutton scam

By Maura McEnaney
CW Staff

HARRISBURG, Pa. — When the U.S. Postal Inspection Service here began investigating incidents of suspected mail and wire fraud at E. F. Hutton & Co. three years ago, inspector John Holland was not quite sure how to approach it. Not long after, however, the novice computer user found himself supervising a micro-based document inventory system and spreadsheet program that produced crucial evidence against E. F. Hutton in a multimillion dollar cash transfer scheme.

Earlier this month, the brokerage admitted it was guilty of conducting a check-kiting operation that allowed it to receive interest on uncollected funds. Through the use of a customized document control software program, two IBM Personal Computers and two IBM Personal Computer XTs working in a stand-alone environment, the Harrisburg postal inspectors were able to recreate the pattern by which E. F. Hutton reportedly transferred its deposits throughout the country, Holland said.

The Harrisburg postal inspectors were called into the case because uncollected E. F. Hutton checks were being transferred from a Wilkes-Barre, Pa., bank. The inspectors first created a data base from information contained in more than five million subpoenaed records from E. F. Hutton and approximately 600 bank accounts through which the checks were passed, he said. The checks were inventoried by account and by month.

Using a document control software program based on a U.S. Department of Justice model and developed by a Washington D.C.-based postal inspector, the Harrisburg office established a system, preparing a list of the documents that could be used as exhibits in a trial. The program automatically assigned a sequential document code and control number to each piece of evidence, Holland said. E. F. Hutton, however, filed its guilty plea before any trial proceedings began.

### Lotus 1-2-3 used

Lotus Development Corp.'s 1-2-3 spreadsheet package was used by the inspection service to trace E. F. Hutton's deposit patterns, according to Holland. That application allowed the investigators to examine E. F. Hutton's customer receipts, funds drawn from its accounts and funds transferred between E. F. Hutton's offices throughout the country on any given day, he said. The tallied information was displayed in bar charts, line graphs and pie charts. Ashton-Tate's Dbase data base management package was used for inventory control, he said.

Less than a month after it implemented this application, E. F. Hutton's pattern became clear, Holland said. The investment firm reportedly was overdrawing its deposit accounts and covering those deposits with checks from other E. F. Hutton accounts. E. F. Hutton would allegedly create additional float by delaying the check-clearing process. Normally, funds are transferred from branch banks to regional banks to money center banks.

However, the Postal Service discovered E. F. Hutton often modified that process, transferring funds among several branches or regional banks before going to the money center banks.

"After the first month, we could see a pattern. You could see exactly what money came in from customers, what money came in from other sources, and [what was] the company's book value," Holland said. "We had to rely on the computer to actually understand what was going on."

---

## VOTE from page 12

committee within Informatics that is seeking possible buyers for the company, said Informatics is considering a transaction with unnamed parties that could lead to a leveraged buyout. The negotiations would probably include members of the company's management and would result in taking the company private, he said. Informatics is holding discussions with several outside parties, but no firm offers have been made, McGurk said.

According to Bauer, Informatics' value was the central issue of the decision to reject the Sterling offer. "We're worth much more than the Sterling offer," Bauer claimed. However, be declined to name a figure that the company would accept.

Wyly disagreed with Bauer's valuation of the company. "If you base Informatics' value on projections, its profits were down 90% during the first quarter, and there's no robust upturn expected for the second quarter, either," Wyly said. He said his offer was "very aggressive" and predicted that "there will be no other bidders at our level. If Informatics can get a better offer [than ours], they should take it." But he did not rule out the possibility of a higher offer from Sterling in the future.

Wyly denied that a due diligence contingency in Sterling's bid was designed as an escape clause. The contingency states that Sterling's offer depended on the examination of Informatics' books and records by auditors.

COAX
BUSTERS

COAXIAL DOUBLER
Double the capacity of an existing coax cable. In just minutes, add a second IBM 3270 terminal or printer where one already exists. This module pair allows simultaneous data transmission of two peripherals over a single coaxial cable.

CXTP MODULE
Wherever phone lines exist, you can easily install an IBM peripheral. Simply attach a terminal or printer to a remote CXTP module and transmit data over twisted pair phone lines to a CXTP module at the controller site

D&V MULTIPLEXER
Transmit simultaneous voice and data over existing telephone twisted pair wire with the quick installation of the D&V MULTIPLEXER. Add a terminal or printer wherever a phone exists without coax expense.*
*For all distance requirements and prices call Fibronics.

BUST THROUGH COAX EXPENSE

Now dramatically reduce costly coax cable requirements with compact, easy-to-install modules that require no external electrical power. Fibronics offers the DOUBLER, the CXTP MODULE (coax-to-twisted pair) and the D&V MULTIPLEXER (data and voice). All three modules are COMPATIBLE WITH ANY IBM* 3270 CATEGORY A DEVICE (or plug compatible).

325 Stevens Street
Hyannis, MA 02601

Telex 951297

Don't let coax hassles keep you from installing the terminal or printer you need now. Install these compact modules yourself, quickly and inexpensively.
CALL FOR FREE INFORMATION: (617) 778-0700

IBM is a registered trademark of the International Business Machines Corporation.

# Firms see need for integrated systems, but few buy

## Survey: Installations trail perceived needs

By Charles Babcock
CW New York Bureau

NEW YORK — The vast majority of Fortune 500-type companies know which integrated office systems are needed to provide business-oriented management information. But only a small fraction of them — about 6% — have such systems in place.

That was one of the key findings in a recent survey conducted by Arthur D. Little, Inc. (ADL), a Cambridge, Mass., management consulting firm. Leon Jackson, a senior consultant with ADL, said the perception of the need to bring more sophisticated systems to bear on information resources is widespread, but installation of such systems lags far behind. He cited the survey results in a talk at the Associated Information Managers' annual conference here last week.

"In theory, companies in the U.S. are moving toward the concept of chief information officer and information resource management. In fact, there is a tremendous indigestion problem out there," he said.

The January survey interviewed employees within corporations responsible for systems integration; it covered 108 bellwether client companies of ADL, he said.

The need for integrated systems was not recognized in all cases. Three percent of the respondents said word processing represented the degree of office information systems they needed. Another 4% said word processing plus such additions as graphics or spreadsheet analysis represented their levels of need.

Another 17% cited electronic mail and office applications programs as adequate. But 76% said integrated systems would tie word processors, terminals and personal computers together into local-area networks and allow the firms to communicate with departmental computers and corporate mainframes.

Of this group, "Five percent think they have integrated information systems now, and they're being optimistic," said Jackson.

When asked if they had a plan to integrate office information systems, 21% said they did and 58% said they were drawing one up. Twenty companies, or 19% of the respondents, acknowledged they had no plan. Of these, eight firms said they had no intention of trying to get one, Jackson said. The eight represented holding companies with small corporate staffs overseeing scattered divisions, he added.

### Obstacle to integration

An obstacle to effective information resource management is that integration requires a joint effort by separate and often competing departments, Jackson continued. When asked if DP, telecommunications and office systems directors report to the same executive, 78% said they did and 22% said they did not.

Of those who said they did, 67% reported to an MIS vice-president or executive, which, according to Jackson, is an indication that "the MIS director is still very strong in this area."

Fifteen percent reported to a chief information officer; 9% reported to a chief operations officer; 6% reported to the chief financial officer; and 5% reported to an administrative staff member. The remaining 8% reported to "other" executives.

When Jackson worked as a consultant to FMC Corp., a defense, machinery and chemicals company in Chicago, the MIS director reported to the chairman and the telecommunications director reported to the chief financial officer. The two executives had to talk to each other to figure out what their respective departments were doing. Jackson said it was never suitably explained to him why the organizational structure worked that way, but he surmised that the chairman "had a bond of loyalty to the [chief financial officer] and was reluctant to take part of his responsibility away from him," Jackson said.

FMC eventually reorganized to have the MIS and telecommunications directors report to the same executive. "The idea of information resource management is catching on," he said, "but we still have a long way to go."

A second speaker, Barbara M. Rodriguez, national coordinator of office systems for Arthur Young & Co., said the accounting firm is trying to interconnect the minicomputers and microcomputers in its 90 regional offices. It also wants them to have access to mainframes at its New York headquarters.

"It is not the technologist who is driving [office integration]. It is the business person" seeking to provide better services to his customers, she said.

Until recently Arthur Young spent $3 to $9 million annually on technology without any plan for integrating it into the organization, she said.

Even with a plan, she said, an extensive "marketing" effort is needed within the organization to win acceptance for it, and usually "a change agent" is selected at each office "to sing the praises of what we're doing," she said.

C AND PASCAL FOR THE DEC FAMILY

WHITESMITHS LTD

WHITESMITHS, LTD. HAS THEM

| Native Compilers | Cross Compilers |
|---|---|
| RSX-11M, M+ | VERSAdos-68K |
| RT-11 | CPM-80 |
| RT-11 Non-EIS | DOS-86 |
| POS-11 | POS-11 |
| UNIX-11 | |
| IDRIS-11 | |
| VMS VAX | |
| UNIX VAX (III, V, 4.1, 4.2 BSD) | |

Whitesmiths, Ltd.

97 Lowell Road, Concord, MA 01742, (617) 369-8499, Telex 750246, SOFTWARE CNCM
800-225-1030

INTERNATIONAL DISTRIBUTORS: Australia, Nexology, Ltd., No. 1 Rosebery Ave., Rosebery 2018, N.S.W., (790) AA74948 France, COSMIC s.a.r.l., 76 Quai Des Carrieres, 94220 Charenton Le Pont, (842) 232507, Germany, GEI, Albert-Einstein-Strasse 61, 5100 Aachen Walheim, (841) 8329745, Japan, Advanced Data Controls Corp., Kyoritsu, Kojimachi Bldg. 5, Kojimachi 5-Chome, Chiyoda-Ku, Tokyo 102, (781) 32902 Sweden, Unisoft AB, Fiskhamnsgatan 10, S-41455 Goteborg, (854) 20120, United Kingdom, Real Time Systems Ltd., P.O. Box 70, Douglas, Isle of Man, (851) 628556

# AT&T streamlines DP section in postbreakup consolidation

By Paul Korzeniowski
CW Staff

While divestiture left data processing departments at the former Bell operating companies relatively unchanged, the same cannot be said for DP shops at the former parent, AT&T. Since divestiture, AT&T DP staffs have shrunk by approximately 5% as the communications company has consolidated DP departments and functions.

"We are attempting to develop an architecture that will be consistent throughout the organization," noted Joseph Laferrera, system engineering vice-president in the Information and Telecommunication System division at AT&T Technology, the company's unregulated sector.

A key to that structure is the integration of functions that were previously duplicated by various departments. DP functions for the communications company's regulated entity, AT&T Communications, which includes the former Long Lines division, were combined with those of the General Department, AT&T's central operation.

"We had to blend two operating structures into one, taking the best each had to offer," said Dwayne Luse, director of the finance department in the systems development and processing division at AT&T Communications.

### Systems integrated, cuts made

As systems were integrated, cuts were made. "When we integrated systems, we attempted to consolidate functions so fewer people would be needed to run them," Luse remarked.

Divestiture created other opportunities for consolidation by forcing AT&T to redesign many existing systems. "We had to add some 45,000 telephone operators to our payroll system," Luse said. "Before divestiture, the operators were paid by the operating companies. The design of these systems was difficult because we added features and tried to cut staff."

Cuts in DP personnel were principally made in operations areas. When operations staffs were cut, staff members were transferred to other areas of the company, Luse said. "There were a number of departments that needed people with computer experience," he said.

Thus far, programmers have been spared from the cuts because the need for their services has increased. Laferrera listed two reasons for the increased need: technical advances and divestiture.

"There are office automation applications today that were not possible a few years ago," he noted. "We want to supply our workers with the latest equipment."

Laferrera listed a number of applications that were spawned by the breakup:

- Customer billing, which had been handled by the former operating companies.
- Supplying billing data to independent suppliers as well as to the former operating companies.
- A consumer product division that was formed to sell AT&T equipment at J.C. Penney Co. and Sears, Roebuck & Co.

Some of these functions were so complex that new departments were created. "A 300-person department was formed to supply billing and payroll information for one application," Laferrera stated.

Despite the new applications, Laferrera noted that AT&T planned further consolidation. "We are constantly evaluating our applications to determine if there are any cost-cutting measures [we can implement]," Laferrera said.

### 'Legally forbidden to complete'

"There are a number of items that we are legally forbidden to complete. [For example, the regulated and unregulated arms of AT&T are unable to consolidate DP functions.] As these restrictions are lifted, we will consolidate other areas," he said.

The communications company has tried to ease the consolidation process. "Before we integrated [AT&T Communications] and [the] General Department, we undertook a two-year study," Luse stated. "Management and entry-level employees were transferred between departments. Changes were carefully planned. The integration process is almost completed. There are only a few small pockets that have to be incorporated.

"To judge how well the integration was handled, we monitored our turnover rate. It remained at a rate attributable to normal attrition. There hasn't been a significant increase since divestiture."

---

## DIVESTED

from page 1

vice-president estimated that there were 1,000 Nynex data processing employees in New England.

Ironically, managers cited companywide layoffs as a principal reason for DP staff increases. "When other departments were forced to cut their staffs, they [still] needed a means to complete their work," Gallagher noted. "For many departments, the best method was through automation."

These applications required additional data processing workers. "When Nynex offered an early retirement option, we did not allow data processing people to take it," Gallagher maintained. "We just couldn't afford to let our people leave."

Cuts in other departments' budgets, coupled with increases in DP staffs, created some predicaments. "With other departments cutting staff, we really had to justify increases in our budget, for it was carefully scrutinized," Gallagher said.

Additionally, divestiture created more new applications than the number of old ones it eliminated at some of the former operating companies. "For example, we no longer run applications for customer installation services; that is solely an AT&T function," Gallagher said. "But we supply billing and customer information to a number of carrier services like [MCI Communications Corp]."

Some applications, originally designed to supply AT&T with financial information, have changed slightly. "We supplied AT&T with financial data that it would consolidate for various financial reports," Illinois Bell's Muntner said. "Now, rather than feeding the data to AT&T, we send it to Ameritech."

Although the data processing departments have thus far been largely unaffected by divestiture, managers agreed that significant changes could be made in the next few years, as the seven regional operating companies function increasingly as separate units. This shift will cause them to consolidate some functions, including data processing functions, managers said.

"We have not merged our New York and New England data processing departments per se, but we are attempting to integrate some functions," Gallagher noted. "For example, when a new payroll system is required, either the New England or the New York branch will design and maintain it rather than designing two separate systems." Gallagher discounted the possibility of a complete merger of Nynex's New England and New York data processing departments.

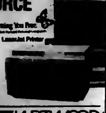
The merger route is a possibility at Ameritech, where the company has undertaken a study to determine which DP functions can be united.

YOUR HEWLETT-PACKARD SOURCE

SALES
SERVICE
LEASING

Setting You Free.
[illegible]

LaserJet Printer



A complete line of HP equipment and supplies
Model 110 Portable
Model 150 Touch-Screen/Desk-Top
LaserJet 300 CPS Letter Quality
ThinkJet under $500.
Plotters- 8, 6 and 2 pen

1-800-221-1127
[illegible]

WESTWOOD
COMPUTER CORPORATION

WASHINGTON UPDATE
CW Washington Bureau

## Tymnet wins bid for government net

WASHINGTON, D.C. — The U.S. Department of the Interior last week awarded a $20.8 million contract to Tymnet, Inc. of Vienna, Va., for a packet-switching data communications network for the department's offices and bureaus.

The nationwide service eventually will replace parts of "the myriad of fragmented communications services" now used by the department, according to Interior Under Secretary Ann McLaughlin.

McLaughlin said the department expects substantial savings in data communications costs. She said the U.S. Geological Survey alone is expected to reduce data transmission costs by 30%, for a savings of $270,000 per year.

## Senators introduce computer amendment

WASHINGTON, D.C. — Four U.S. senators recently introduced legislation that would revise the Computer Fraud and Abuse Act of 1984 to protect from criminal prosecution federal employees who disclose government information.

The bill, S. 610, was introduced by U.S. senators Charles McC. Mathias Jr. (R-Md.), Patrick J. Leahy (D-Vt.), Edward M. Kennedy (D-Mass.) and William S. Cohen (R-Maine).

The 1984 law makes it a crime to disclose information stored in a U.S. government computer if the defendant gains access to the computer without authorization. The bill limits the scope of the law to prohibit disclosure of only "personally identifiable information" covered by the Privacy Act of 1974.

Mathias and Leahy said the 1984 law's broad language could require prosecution of "whistleblowers" who disclose information about federal fraud and abuse. In addition, they said, the law could discourage federal employees from releasing information under the Freedom of Information Act for fear of prosecution.

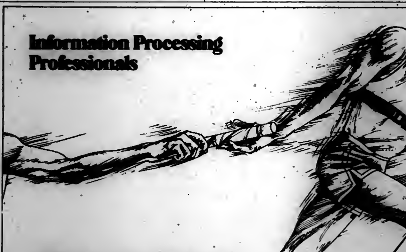
## Pentagon attempting to cut systems costs

WASHINGTON, D.C. — Pentagon officials, responding to criticism from the U.S. Congress about Pentagon computer procurement and management practices, recently testified that they are on the right track toward reforming those practices.

John P. Springett, director of information resources management systems at the U.S. Department of Defense, told the U.S. House Appropriations Committee's Subcommittee on Defense of the following practices:

- The department increasingly is purchasing its computers outright, rather than leasing them. For leases already in existence, the military is buying out the leases when that is cost-effective.
- The department is placing greater emphasis on acquiring computers through open competition rather than relying on General Services Administration list prices, which tend to be higher than competitive contracts.
- The Pentagon has begun to create an inventory of its computers and has logged nearly 28,000 units, with 5,400 of them valued at more than $50,000.

Information Processing Professionals



When you pass on what you know, everyone wins.

It's time to make your move to the front with a fast-moving company. Electronic Data Systems (EDS) Corporation has grown to be the dominant company in the information processing field. It employs more than 28,000 people, generates over $900 million in annual revenue, and has an amazing growth rate of 20% per year. Daily transactions exceed eight million from more than 30,000 on-line terminals, and the company has created the nation's third largest communications network. In this environment of rapid growth, your opportunities for career advancement are virtually unlimited.

EDS is now looking for outstanding professionals to train recent college graduates through our dynamic Systems Engineering Development (SED) Program.

SED — a vital investment in our future.

The SED Program, nationally recognized as the model for the industry, is designed to turn out the best Systems Engineers. At EDS, a Systems Engineer is a computer programmer, programmer analyst, and systems analyst all in one — capable of solving complex business problems through computer applications. Obviously, this dynamic program requires instructors above the norm — in both ability and motivation.

Your career with EDS

These positions are highly visible and offer an excellent introduction into management. Our instructors are afforded the opportunity to supervise 20 employees, make performance evaluations, and provide career counseling. At the end of a typical 18-month to two-year assignment, instructors are given the opportunity to remain in the educational department, or to choose another career path within EDS according to their interests and capabilities.

Can you qualify?

The professionals we seek must have 3-5 years work experience and have a keen interest in both the technical and business aspects of information processing. Candidates must also have excellent comprehension of COBOL or ALC and recent IBM mainframe experience. Background in CICS, VSAM or in a data base environment is a plus. Although no previous teaching experience is required, you must have a professional image and be able to present your thoughts clearly in an organized manner. U.S. citizenship is required.

If you qualify, we would like to talk with you. Please send us your resume or call now. Your career time is too valuable to waste.

Call us collect Monday-Friday from 9:00am-5:00pm (Central Time) at (214) 490-2904. Or send your resume to:

Richard Burges
Electronic Data Systems Corporation
Corporate Headquarters Recruiting
12200 Park Central Drive
Suite 200A, Dept. ICW1405
Dallas, TX 75251

Bring your mind to EDS.

EDS
Electronic Data Systems Corporation

An Equal Opportunity Employer M/F

# Freeing business from computer languages first began with Computer Corporation of America.

## But keep it quiet. We did.

We're making it easier for management and computers to talk direct. Quietly and easily.

After all, our founders over 20 years ago were a computer scientist and a psychologist. So our focus literally began with creating software that let people more easily communicate with computers.

And our first contribution was the earliest example of fourth generation language.

One of the latest, is the Intelligent Information Center. And with it, your business executives can use their personal computers to access and use the firm's mainframe computer data direct.

To speak in slightly technical terms, the IIC is a language free, decision support query and report writing system that's menu driven and syntax free. In fact, it's just about keyboard free.

Your executives can write their own reports or use mainframe data on their favorite spreadsheet in the office or at home.

The Intelligent Information Center is already proven in industry use, to be a very powerful, very flexible link between mainframes and people. The non-computer-expert type of people.

Just like our founders would have wanted.

We'd like to tell you more about our advanced technology, from our very powerful MODEL 204 database software, to our other application development tools for business.

Write John Donnelly, VP Marketing, Computer Corporation of America, Four Cambridge Center, Cambridge, MA 02142. Or call 1-800-258-4100.

**Computer Corporation of America**

A Crowntek Company

Software innovators creating better ways to manage business

# IDEA IS SHIPPING A 5250 TWINAX EMULATOR WITH A UNIQUE FEATURE.

# IT WORKS.

Last Fall, two major companies announced a twinax board for PC-to-IBM System 34/36/38 communications. Today, only one company is shipping a product that's fully functional: IDEA.

Unlike our competition, the IDEAcomm 5251 twinax board comes complete with software. This may explain why the thousands of units shipped since December are making IDEAcomm 5251 the industry standard worldwide.

You'll also find many third-party software packages for the System 3X supporting our board: Decisionlink™ and Intelink,™ for example.

But our customers have found lots of other reasons to choose IDEAcomm 5251.

We provide a "hot key" capability, hard disk access, printer support, four concurrent host sessions, and data transfer. Plus, our customers who benchmark IDEAcomm 5251 tell us that it's incredibly fast.

And IDEAcomm 5251 does all this and still requires only 30K of memory on your PC.

So if you want a 5250 twinax emulator with performance rather than a promise, call IDEA at 800-257-5027.

**IDEAssociates**

The best IDEAs for personal computers.

IDEAssociates, Inc., 35 Dunham Road, Billerica, MA 01821
(617) 663-6878 Telex 94-8245. IDEAssociates S.A., 5, Route de
Chene, CH1207 Geneva, Switzerland (22)86.11.15 Telex 428 308 KRICH

**The communications standard.**

Decisionlink is a trademark of Laguna Laboratories, Inc. Intelink is a trademark of Marcam Data Systems Corporation.
IDEAcomm 5251 is a trademark of IDEAssociates, Inc.

# Courts wary of using computer printouts as evidence

By Mitch Betts
CW Washington Bureau

Legal specialists are warning U.S. firms that computer printouts are not automatically admissible as evidence in some state and federal courts.

Because some judges distrust computer-generated records, the DP manager may be required to testify about the procedures used to create and ensure the integrity of the business records, according to several lawyers interviewed recently.

"It's not a foregone conclusion that a judge is automatically going to accept your computer-generated record," noted Michael D. Scott, an attorney in Manhattan Beach, Calif. The problem, he said, results from vague state laws and federal and state judges who view computer records as unreliable.

**Printouts inadmissible**

In several cases — one as recent as 1983 — Illinois judges ruled computer printouts inadmissible because businesses failed to provide detailed testimony about how the computer hardware and software works when preparing the record, according to a report in the *John Marshall Law Review* (Vol. 16, No. 1), published by the John Marshall Law School in Chicago.

In essence, the law considers all documents inadmissible hearsay unless they qualify for an exception to the hearsay rule, such as the exception for business records that are contemporaneous and trustworthy, attorneys said.

But they said it is sometimes difficult for computer-generated records to satisfy these standards. For example, it is hard to tell exactly when a business record was stored in the computer — judges are very skeptical of data entered just before trial — and it is difficult to prove the printout is not a product of self-serving selective retrieval.

As a federal district judge in New Jersey put it, "The computer is a marvelous device that can perform countless tasks at high speed and low cost, but it must be used with care. This is because it can also make errors at high speed." (The judge was skeptical of Internal Revenue Service computer records in the 1975 case of Neal v. U.S.)

**More credibility**

But courts increasingly are accepting computer printouts as they recognize that companies rely on their DP operations and have a strong business incentive to maintain data integrity, the legal sources said. Furthermore, one source said the emerging technology of unerasable optical storage may provide more credibility.

Robert F. Williams, president of Chicago-based Cohasset Associates, Inc., a consulting firm that specializes in records management, said that because records cannot be removed from unerasable optical storage systems, records stored on such systems should be more acceptable in court than records kept in magnetic storage. In a presentation at the recent conference of the Association for Information and Image Management in Washington, D.C., however, Williams noted that this assertion has not yet been tested in court.

> *'The bottom line is to run a business-like DP operation, with logs that document the entries and procedures.'*
>
> — Daniel T. Brooks
> Washington, D.C., attorney

Computer law specialists strongly urged firms engaged in litigation to prepare testimony supporting the accuracy of their computer-generated evidence. "Be prepared to have somebody challenge the authenticity and accuracy of a computer-generated record and get someone in DP who understands the file maintenance and security procedures who will testify," recommended Daniel T. Brooks, a Washington, D.C., attorney.

"The bottom line," Brooks concluded, "is to run a business-like DP operation, with logs that document the entries and procedures."

Peter M. [illegible], author of the *John Marshall Law Review* report, argued that detailed testimony about the computer system would be unnecessary if courts stopped discriminating between written and computer records and adopted a "presumption of reliability" for computer printouts.

"Requiring an extensive and technical foundation [of detailed testimony] as a prerequisite to admissibility only perpetuates the judicial myth that electronic record systems are inherently less trustworthy than conventional ones. It increases the complexity of trials and . . . unfairly burdens the proponent of a computer record," he wrote.

Seeing is believing.

Introducing VU-TEK.

No other glare screen does more to increase productivity.

A glaring problem VDT operators face.

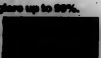
More than 90% of all employees who regularly use VDT's may suffer from eyestrain.* And that can make your business suffer, too.

The cause of eyestrain? Glare. Reflection from office lights. And hard to read characters.

The result. Impaired vision. Headaches. Fatigue. More work breaks and absenteeism.

And reduced office productivity.

VU-TEK™ reduces glare up to 99%.



VU-TEK contrast enhancement filters help increase operator productivity by eliminating up to 99% of reflected VDT glare while also improving character clarity. VDT operators can now work more efficiently and comfortably.

VU-TEK's dramatic effectiveness is due to an advanced circular polarizer that traps glare preventing it from reaching the VDT operator's eyes.

No other glare screen is more effective than VU-TEK.

VU-TEK increases character legibility.

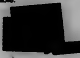
VU-TEK uses a special distortion-free anti-reflective coating on the front glass surface to improve character contrast and clarity.

The result... bright, clear, easy to read VDT's.

American Hoechst Corporation
Specialty Film Products

Fits leading VDT's. Easy to install.

VU-TEK fits more than 800 different VDT types. Custom sizes are also available.



VU-TEK is lightweight, durable and attaches in seconds.

"See for yourself" free trial.

End the glaring problem with computer automation — with VU-TEK.

To order your VU-TEK or arrange a 30 day free trial, call collect 1-805-987-5026. Or mail the attached coupon for more information.

VU-TEK is the result of research by American Hoechst, a member of the Hoechst Group of companies, with worldwide sales of $14.5 billion, and annual research expenditures of over $630 million.

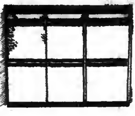
*National Institute For Occupational Safety and Health Study, August 1981.

For additional information on VU-TEK™ contrast enhancement filters mail to:
American Hoechst Corporation, Specialty Film Products, Marketing
Dept., 805 Via Alondra, Camarillo, CA 93010

Name
Company
Street
City, State
Zip
Phone ( )

VU-TEK™ The difference is clear.

© American Hoechst Corporation, [illegible]



“VAX IS GIVING AMF MORE TIME FOR THE THINGS THAT REALLY MATTER.”

Michael Lilly
Director, Corporate MIS/Operations
AMF, Incorporated

To many people AMF means recreational sports. But today it also means electronic components, filtration equipment, automated process equipment and more.

It's a vastly more complex company. A company made vastly more manageable by Digital's VAX™ computers – the vital component of office automation at AMF Corporate/MIS Operations.

As Michael Lilly says, the company's decision to stake its future in MIS on Digital's VAX computers – and the office automation tools like All-In-1,™ DECnet™ and DECmail™ software that run on them – was hardly a snap judgment.

Every major computer company was considered. Lilly says that, “dollar for dollar,” only Digital's VAX system offered the power, ease of use and communications capability with other computer systems – including IBM – that AMF needed.

So AMF chose the VAX computer – the best-selling 32-bit computer in the world – and waited to see what the machine could do.

“SUDDENLY WE HAVE TOOLS AND CAPABILITIES WE NEVER HAD BEFORE.”

Lilly and his group didn't have to wait long. The system was up and running within days.

Reaction within the department was rapid and gratifying. “We really got excited about it,” says Lilly. “Immediately, we were communicating better.” And there was more – spreadsheets and word processing and a mail system. “Suddenly,” Lilly said, “we had a vehicle for total open communications to every important person or department in the corporation.”

Part of the story behind AMF's almost instantaneous rapport with the VAX system is that it's so easy to use. Menus and operating commands are the same for each fully integrated application. Whole functions are completed in as few as two keystrokes. And because everything is in plain English, it's literally as simple as A-B-C to incorporate

© Digital Equipment Corporation 1985. Digital, the Digital logo, VAX, VMS, All-In-1, DECnet and DECmail are trademarks of Digital Equipment Corporation

any VMS™ application into the daily work routine.

## "INSTEAD OF SIX WEEKS TO DEVELOP AN APPLICATION, IT TAKES TWO."

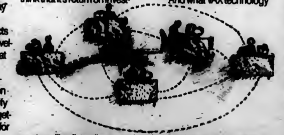
VMS software development tools have so improved the way things are done in his department, Lilly says, that he projects the savings in applications development time and costs alone at some 70 percent.

"Many of our new applications here at AMF will be written on that machine. I can't quantify it exactly. All I know is that I'm getting a heck of a lot more bang for my buck."

The first tests of VAX equipment proved so successful, that AMF quickly enlarged the system, adding terminals and DECmate™ and Rainbow™ personal computers. New departments went on line, for example finance.

"And that," says Lilly, "really created an explosion." Now AMF is implementing programs like general ledger systems, stock options and inventory systems, and keeping more efficient and flexible records, from accounts payable to personnel.

Adds Lilly, "People here are screaming to be on the VAX system, and there's got to be a reason for that. And I tend to think that it's return on investment, mailing lists, discounted cash flows, spreadsheets they couldn't even begin to do before, versatility, tremendous graphics potential. It's just a whole world of opportunity that is elevating AMF to the forefront."



## "ANYONE WHO USES VAX IS GOING TO GET THE COMPETITIVE EDGE."

Lilly feels the VAX system has already elevated his own department to the forefront.

"It's put corporate MIS on the map," he says. "It has effectively increased productivity and efficiency. People are beginning to believe we can do the things we say we are going to do."

And what VAX technology is doing for his group, Lilly believes, it can do for all of AMF, or indeed for any company. "Any corporation that employs this technology," he says, "is going to get the competitive edge.

"This technology will explode. Because there are a thousand reasons to have it. But what it really all boils down to is this: everybody will want a VAX system because they can do the job better, faster and more efficiently.

"And that's what really matters."

## BEST ENGINEERED MEANS ENGINEERED TO A PLAN.

VAX office automation computer systems, like all Digital hardware and software products, are engineered to conform to an overall computing strategy. This means our systems are engineered to work together easily and expand inexpensively. Only Digital provides you with a single, integrated computing strategy direct from desktop to data center.

To learn more about Digital's VAX system, call toll free: 1-800-DIGITAL, ext. 200, or write Digital Equipment Corporation, 200 Baker Avenue, West Concord, MA 01742.

## THE BEST ENGINEERED COMPUTERS IN THE WORLD.

digital™

# OUR WINDOWS OPEN A LOT OF DOORS.

**Introducing the 5425 terminal from** AT&T **Teletype Corporation.** It's the most highly featured ANSI 3.64-based terminal we've ever built.

Start with the 5425's windowing capability. Then add the fact that it's a general purpose editing terminal that's compatible with many computers such as VAX* and AT&T's new 3B series, and you'll see why it's such an outstanding value.

The nicest thing about the windowing feature is that it lets the operator take better advantage of multi-tasking capabilities of operating systems such as UNIX* System V.

As if that's not enough, the operator can do full-screen windowing without changing a program to fit the screen. At the same time, two more windows, which can overlap and vary in length and width, can be opened. The screen also can be divided into four independent windows which act as viewports into the terminal's 9600 character memory.

With 38 downloadable function keys and 16 screen labels, the 5425, which is also VT102* compatible, opens new levels for productivity. And the optional integrated intelligent modem features five programmable autodial keys to speed the dialing and logon functions. The modem also permits remote transmission from a standard phone jack.

If you want to open new doors in your career, look into our 5425. It'll make you look good. For more information, write AT&T Teletype Corporation, 5555 Touhy Ave., Dept. 3223-F, Skokie, IL 60077. Or call **1 800 323-1229, ext. 801.**

*UNIX is a Trademark of Bell Telephone Laboratories, Inc. VT102 and VAX are Trademarks of Digital Equipment Corporation.

**TELETYPE: VALUE SETS US APART.**

**AT&T**
Teletype Corporation

"Teletype" is a registered trademark and service mark of AT&T Teletype Corporation. ©1984, AT&T Teletype Corporation

# OCC orders service firm to cease 'unsafe' practices

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — In an unusual move, the Office of the Comptroller of the Currency (OCC) recently issued an enforcement order against a firm that provides DP services to national banks and others. The agency ordered the unidentified firm to cease the "unsafe and unsound practices" identified by bank examiners.

The OCC did not name the subject of its enforcement order or specify the unsound practices, a spokesman said, though it is evident from the order that the firm had financial problems that could have disrupted service to banks.

The company agreed to the enforcement order, the agency said.

The OCC, a unit of the U.S. Department of the Treasury that regulates national banks, usually issues enforcement orders against banks with unsound practices but rarely against companies that are not banks, the spokesman said. OCC officials asserted that the agency has the authority to regulate and supervise companies that provide DP services to national banks under the Bank Service Corporation Act.

The action "underscores the OCC's belief that [DP] plays an integral part in the safe and sound operations of financial institutions," the statement said.

The OCC's order requires the data processing company to do the following:

■ Provide timely, audited financial information to the OCC; make financial information available to banks serviced by the company; and implement a contingency plan for disruptions of service.

■ Establish internal controls and conduct regular audits to ensure the quality of financial data provided to national banks and their customers.

■ Provide adequate liquidity in advance when operating losses are identified.

The OCC warned that it will continue to review carefully the companies that handle bank records and transactions and also expects banks themselves to take appropriate precautions.

"The OCC encourages banks to evaluate outside servicers at least annually," the statement said. "When a servicer's condition is found to be unsafe or unsound, the OCC expects banks to seek other sources for the services," it concluded.

In 1981 the comptroller's office advised banks to review the financial condition of their servicers, and in 1983 the office advised banks to evaluate annually the contingency plans of outside servicers.

This January, the OCC published a notice reinforcing its recommendation that banks be informed of the financial condition of DP servicers.

Reaction to the comptroller's enforcement action from a major DP service firm was favorable. Michael Nugent, government affairs counsel here for General Motors Corp.'s subsidiary, Electronic Data Systems Corp., said the comptroller's policy is "reflective of the critical role that [DP] plays in the banking industry — it's the Achilles' heel."

Nugent said the policy "puts service firms on notice that they've got to keep their financial banks in order" and thus may enhance the industry's credibility. The regulatory activity does not threaten the industry, unless it expands into managing the business affairs of DP service providers, he said.

# Telecom meet to address array of topics

NEW YORK — Communications Week '85, a conference on the state of the voice/data communications industry, will be held June 17-21 at McGraw-Hill, Inc. world headquarters here.

The keynote address and a daylong series of reports from the communications industry by executives, journalists and consultants will be given Wednesday, June 19.

The keynote speaker will be Marty Cernese, president of the Association of Data Communications and director of operations for Aeronautical Radio, Inc. The topic of Cernese's speech will be "The User Focus in Communications."

Monday and Tuesday, June 17 and 18, will feature seminars in data communications, micro communications and compatibility, telecommunications and computer communications security.

Thursday and Friday, June 20 and 21, will be devoted to technology workshops on a range of topics including micro-mainframe links, fiber optics, protocol conversion, micros and local-area networks, intracity private networks and network control centers.

The cost of the conference ranges from $195 for Wednesday only to $1,195 for the entire week.

More information is available from Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J., 08075

Sterling Software produces the best DASD Management System in the world

... and we can prove it.

DMS/OS™ the DASD Management System from Sterling Software Marketing, has consistently been rated highest for overall user satisfaction in leading independent surveys. DMS/OS users— worldwide— trust our product to manage approximately 489,935 volumes of data a day.

15,309,000,000,000 bytes of data daily...
That's a lot of user confidence, and here is why.

**DMS/OS — The First $25 Million Seller In DASD Management**
In 1984, DMS/OS became the first system software package for data management to top a total $25 million in sales.

**1,000 users give their reasons for choosing DMS/OS**

- Easy to install — Easy to use
- Keep more data on-line, using less space
- On-line reporting for fast decisions
- Dramatically reduces backup and recovery time
- Supports all standard data set organizations
- Fast data accessibility, regardless of medium
- Adaptability to new hardware/software systems
- Automates migration to 3380's
- Reduces personnel costs

**We Listen To Our Users**
When DMS/OS users tell us about their data management needs, we listen — and respond with enhancements that fit those requirements. When you call for technical assistance, implementation advice — or any question at all — you are talking to a key member of the DMS/OS development team.

No matter what hardware or software changes occur in your operating environment, DMS/OS keeps pace... continuing to evolve... always state of the art.

**Let Us Prove It To You...**
**With A FREE 30-Day Evaluation**
Sterling Software Marketing offers a free DMS/OS evaluation. We'll show you why we are the proven leader... You have nothing to lose, and everything to gain in DASD space.

For your FREE DMS/OS evaluation call today 800-824-8512. In California, Alaska, Hawaii, and Canada call collect 916-635-5535.

STERLING
SOFTWARE
MARKETING
11050 White Rock Road, Suite 100
Rancho Cordova, CA 95670-6095

DMS/OS is a trademark of Software Laboratories, Inc.

# Former Bell operating firms get OK to upgrade Centrex

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C. — The Federal Communications Commission refused to kill the efforts of former Bell operating companies to revive their flagship business service — Centrex — with upgrades such as call routing, call forwarding, speed dialing, customer-originated changes and other features sought by the telephone interconnect industry.

Opponents charged that the upgrades to Centrex, a service in which the local telephone company switch premises perform private branch exchange (PBX)-type functions on a dedicated basis for customers, were not part of basic regulated telephone service but were computerized enhancements and, therefore, should be offered through an unregulated subsidiary, according to the Second Computer Inquiry policy.

However, the FCC did find that one proposed feature, customer-dialed account recording, otherwise known as station-message detailed recording, could not be offered as a part of regulated and tariffed Centrex. The FCC said that station-message detailed recording would make use of customer-generated station account information and store it in a Centrex computer.

### Keeping bread-and-butter business customers

In the last two years, the seven regional holding companies have moved aggressively to improve Centrex to keep their bread-and-butter business customers who were looking for features being offered in PBX systems.

The FCC noted that customer-originated station changes, for example, may appear to be an enhanced service because interaction with stored information takes place. "The test for determining whether such services may be provided as tariffed adjuncts to basic service was set out in Computer Decision II: Such features may be tariffed if they facilitate use of traditional telephone service without changing the nature of traditional telephone service," the FCC said.

The North American Telecommunications Association petitioned the FCC to overturn the Centrex upgrades and said it was disappointed by the FCC decision, which "provides additional, significant opportunities for the [divested Bell operating companies] to shift costs illegally from monopoly to competitive services."

The FCC's Common Carrier Bureau announced that it was preparing a rule to redefine exactly what criteria constitute "enhanced services." The bureau said that the enhanced services rule should be ready for release by the end of May or the beginning of June.

THE MOST VALUABLE EQUIPMENT
WE OFFER IS FREE.

Getting the right data processing
equipment shouldn't be costly.
And USL Data Systems is
equipped with applications experts
who make sure of that.
Absolutely free.

When you rent, lease or purchase,
there is no risk of getting the
wrong equipment.
Our applications experts make sure
you get the system that's
exactly right for you.
And we don't just provide a
limited number of products.
We have all the leading brands
in stock for immediate delivery.
Hardware and Software.

And because you're renting
or leasing from
USL Data Systems, there's
no risk of your system
becoming obsolete.
No risk of over expending
your capital.
We offer the most flexible
financial options in the business.
Short term, long term, lease-to-own,
outright purchase, and more.
Plus top service and support,
including a toll-free hotline.

Phone (800) 835-2246, ext. 184
and ask for the applications expert
nearest you.

USL Data Systems
A U.S. Leasing Company
2988 Campus Drive
San Mateo, CA 94403
(800) 835-2246 x 184

# Afips creates information issues panel

RESTON, Va. — The American Federation of Information Processing Societies, Inc. (Afips), based here, last week announced the formation of the National Information Issues Panel to provide U.S. legislators and the general public with expert advice on information policy.

An Afips announcement said that Stephen S. Yau, president of Afips, described the project as a "catalyst for communications between legislators and the information processing community." The panel reportedly will hold several public meetings in the fall and will publish reports on specific topics.

Afips selected Robert Lee Chartrand, senior specialist in information policy and technology at the Congressional Research Service here, as chairman of the panel. Yau, chairman of the Department of Electrical Engineering and Computer Science at Northwestern University in Evanston, Ill., will also participate as a panelist.

Afips, established in 1961, is a federation of 11 scientific and educational societies in the information processing field.

# Intech meeting set for August

ALEXANDRIA, Va. — The third annual Integrated Information Technology Conference and Exposition (Intech) will be held Aug. 26-29 at the Moscone Center in San Francisco.

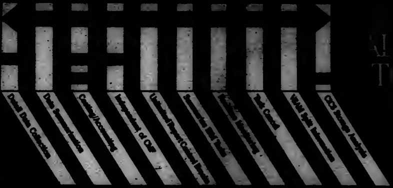
Designed for users of corporate information systems, the four-day conference will include sessions on information security, networks, personal computers, integrated voice/data networks and technology management.

Registration for Intech is $395 before July 15 and $495 after July 15.

More information is available from National Trade Production, Inc., located at Suite 400, 2111 Eisenhower Ave., Alexandria, Va. 22314.

# THE MONITOR FOR CICS

## MORE THAN A REPORT WRITER


Detail Data Collection
Data Summarization
Costing/Accounting
Independent of CMF
Unlimited Report Control Fields
Summaries and Trends
Problem Monitoring
Task Control
VSAM Split Information
CICS Storage Analysis

## AN ALTERNATIVE TO PAF AND CICSPARS

### Data Management

Summarize and compress application and systems data into a cumulative file. Long range reporting via user-defined control fields and double word capacity. One job execution for reporting and historical management of all systems.

- Automatic monthly history extraction
- User defined history control fields
- Tape and disk support for all operating systems
- Capacity planning and trend analysis reports

### Data Collection

Comprehensive record of transaction performance. System overhead in five categories. Each day's environmental and performance history maintained for online access.

- User defined file controls
- Space saving data compression
- Supports UFO™, MANTIS™, GENER/OL™, NATURAL™, and DMS™
- Automatic file repositioning and file wrap around option
- User friendly clocks, counters, and online exits
- High performance VSAM RRDS

### Reporting and Accounting

Custom hardcopy reports assist in performance and trend analysis, capacity planning, transaction accounting, and problem determination. Select, edit, and report data via the report writer. Charges based on resource fields, total cost or actual consumption.

- CICS overhead, user clocks, and counter reports
- User exits and daily total page
- Report titles and automatic field spacing
- Variable page length and width
- Data selection and exclusion

### Online Features

Online features utilize "user friendly" techniques. Supertrace for application testing. Menu driven system. Graphic realtime, task, storage, and file monitoring systems.

- Automatic problem alerts
- Track and time CICS storage
- Daily performance replay
- Online historic data review
- Shows CICS file and DL/1 database performance

# COMPUTER FAT.

HOW TO AVOID IT, FROM THE LEADER
IN ON-LINE TRANSACTION PROCESSING.

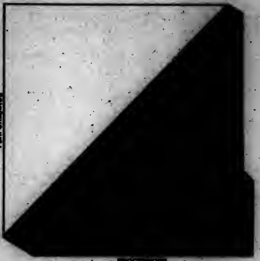
## WHAT COMPUTER FAT IS.

Computer fat is created when you buy more computer than you need. With conventional computer architecture, you have no other choice. You buy the closest fit available and "grow into it."

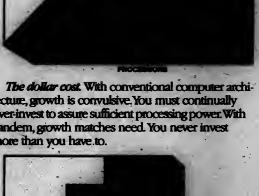
So there is always waste and inefficiency. And you pay dearly for it.

## WHAT IT COSTS.

*The performance cost.* With conventional computer architecture, doubling your processors does not double your performance. With Tandem, each incremental increase in processing power provides matching performance.



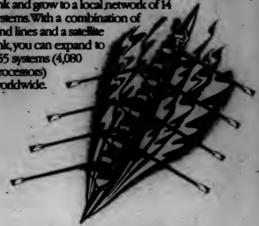
*The dollar cost.* With conventional computer architecture, growth is convulsive. You must continually over-invest to assure sufficient processing power. With Tandem, growth matches need. You never invest more than you have to.



## TANDEM'S NON-FAT ARCHITECTURE.

Tandem Computers has developed the ultimate system for on-line transaction processing. It is the fault-tolerant system that can grow as your needs grow, expanding at any increment you choose.

You can start with two processors and grow to 16 processors in a system. You can put in a fiber-optic link and grow to a local network of 14 systems. With a combination of land lines and a satellite link, you can expand to 255 systems (4,080 processors) worldwide.



*In a Tandem system, there are no idle backup components. They all share the workload.*

With Tandem, your software expands, too. All systems work like one system, and you'll never have to rewrite a line of applications code.

The Tandem NonStop™ system is also enhanced by a high-performance, relational data base that can be geographically distributed to wherever it's needed. And no single component failure can shut you down.

## LET'S CHEW THE FAT.

Tandem systems are already at work for FORTUNE 500 companies in banking, telecommunications, manufacturing, transportation, retailing and energy, as well as several branches of the U.S. Government.

To find out what we can do for you, call (800) 482-6336. Or write for our annual report. Corporate Headquarters: 19191 Vallco Parkway, Dept. 762, Cupertino, California 95014.

**TANDEMCOMPUTERS**

# USDA to begin electronic transmission of farm reports

**By Mitch Betts**
**CW Washington Bureau**

WASHINGTON, D.C. — The U.S. Department of Agriculture (USDA), continuing its aggressive use of computers for information dissemination, recently announced it will offer electronic transmission of farm reports to commercial information vendors, who in turn will sell the USDA reports to farmers.

In response to increasing demand for statistical reports and other agricultural intelligence, USDA officials said the new service will provide bulk versions of the data through Martin Marietta Data Systems, Inc. of Orlando, Fla., beginning July 1.

For the first time, USDA reports will be available from a single electronic source.

### User organizations

Users will most likely be organizations that further distribute USDA information, such as data base and videotex vendors, farm organizations, trade groups and news services and newsletter publishers, the USDA said.

The agency stressed that the service will only supplement the USDA's traditional methods of printing and distributing information.

Martin Marietta Data Systems — which won a five-year contract through competitive bidding — will charge a minimum fee of $150 per month, the agency said.

The USDA, sensitive to criticism of the increasing commercialization of information generated by the U.S. government, defended the decision to use a private vendor.

"The private sector, through competitive procedures, can provide the quality of service demanded [by users] at a reasonable cost to the government and users. USDA does not have available the computer capability to provide the level of service desired by users," the agency said in a statement.

### Hearing held

At a recent hearing held by the U.S. House Subcommittee on Government Information, Justice and Agriculture, the American Library Association and the Information Industry Association (IIA), representing nearly 400 data base vendors, clashed on the subject of electronic dissemination of information and statistics gathered by the government.

The hearing was held to discuss the Reagan administration's recent proposal to rely heavily on private vendors to disseminate government data [CW, March 25].

An IIA representative said that the information needs of the public are best met by a pluralistic, competitive marketplace, and the U.S. government generally should let private vendors disseminate government data.

The library group, however, asserted that this commercialization of government information ultimately would limit access to only those people who can afford computers to gain access to the electronic data bases.

In 1981, the USDA was the first U.S. agency to try electronic dissemination and triggered the creation of Fednews, a service provided by ITT Dialcom, Inc. of Silver Spring, Md., which provides on-line access to U.S. agency news releases.

Other members of Fednews include the White House, the U.S. Army Reserve, the Food and Drug Administration, the Federal Emergency Management Agency, the National Aeronautics and Space Administration and the departments of Labor and Interior.

MANAGEMENT
REPORTING/RETRIEVAL
CAPABILITY
for THE IBM S/38
For more information
Contact Charles White at:
michaels, ross & cole, ltd.
P.O. Box 4533
Oak Brook, IL 60521
(312) [illegible]

**INTERNATIONAL REPORT**
CW International News Network

## AUSTRALIA

CANBERRA — Cybernet, the computer service bureau run by Control Data Australia Pty. Ltd., has lost a $1.26 million contract with Telecom Australia. The latter company reportedly opted to drop Cybernet in favor of Cairenet.

## BRAZIL

RIO DE JANEIRO — A copyright application system that enables recording artists to access data about their copyrights has been developed here by U.S.-based Polygram, Inc. The interactive system, which features a data base and rate calculation capability, is being prepared for export, a spokesman said.

## FRANCE

PARIS — The first videotex terminal equipped with micro capabilities has been unveiled here by Logabax, an Ing. C. Olivetti & Co. company. The Persona 800 machine, intended for mass distribution under the country's nationwide videotex project, is an 8-bit system based on Zilog, Inc.'s Z80 microprocessor, with 64K bytes of random-access memory. The entry-level version is priced at $1000.

## JAPAN

TOKYO — The Ministry of International Trade and Industry has sponsored a $100 million, five-year project to promote the adoption of a Japanese-developed standard based on AT&T Unix. The project, known as Sigma, will develop a Japan-wide Unix-based network, which software developers will reportedly access at a low cost to facilitate the joint-development process.

The Sigma project is the result of a push from Hitachi Ltd. and Fujitsu Ltd., sources said, to alter the practice of importing software into Japan. The likely operating system to come out of the Sigma project will be a version of AT&T's Unix System V.

■

TOKYO — Fujitsu Ltd. is expected to unveil its Escort expert development system during the Business Show, to be held here May 22-25. The price of the system will range between $16,000 and $20,000, insiders said. Escort reportedly will run on the vendor's artificial intelligence machine.

## SWEDEN

STOCKHOLM — Software and consulting firms are on the rise in Sweden as hardware companies decrease in number. According to the latest official figures on computer industry start-ups here, over 700 companies have been established in the computer field over the last three years.

During this period, software companies have reportedly increased their ranks by 50% each year, while hardware companies have decreased in number by 50% annually.

## WEST GERMANY

ESCHBORN — An analysis of attendance at the recent Hannover Faire revealed that IBM had the most popular booth in the Information Technology part of the show. In second place was Siemens AG, followed by the German computer vendor, Nixdorf Computer GmbH.

The poll of attendees also indicated that 64% of the people on hand said they felt a stronger "inclination to buy or invest" than last year.

IBM/38-36 BACKLOG REDUCTION

The world's most successful companies have made Fusion Products Intl. the leading supplier of query/report-processor and spreadsheet software for the IBM/38-36. Call 415 461-4760 or write.

Fusion Products International
900 Larkspur L.C. Suite 295
Larkspur, CA 94939, Telex 176099

FUSION.

E-X

Software AG Users spell it out...Datapro™ survey rates ADABAS

E-X-C-E-L-L-

-E-N-T!

## ADABAS does it again—and we're not surprised!

The results are in! Datapro Research Corporation asked systems software users to rate their data base management systems. And, Software AG users rated ADABAS "Excellent!"

Exactly the same thing happened in an earlier survey when Data Decisions asked users what they thought. For the third year in a row, ADABAS went right to the top of the list as the highest ranked DBMS for the IBM mainframe. And NATURAL was a top contender for best fourth-generation language.

Together, ADABAS and NATURAL make an unbeatable team!

At Software AG we don't believe in surprises. We believe in providing our users with the most powerful software tools available anywhere. And that's the proper plan for the world leader in advanced systems software.

So, if you want the facts about systems software, just ask our users. For starters, send us the coupon below and we'll rush you the official Datapro DBMS report. Or call us at 1-800-336-3761. (In Virginia and Canada, call 1-703-860-5050.)

## Rush me the facts.

Name__________

Title__________

Company__________

Address__________

City__________ State__________ Zip__________

Complete and mail to: Software AG, 11800 Sunrise Valley Drive, Reston, VA 22091. (Or, call 1-800-336-3761. In Virginia and Canada, call 1-703-860-5050.)

Finally … A Unified Overview of PC Software Today and What it Means for You

*The Software Revolution: Trends, Players, Market Dynamics in Personal Computer Software*

By: Robert T. Fertig
Enterprise Information Systems, Inc.

*The Software Revolution: Trends, Players, Market Dynamics in Personal Computer Software* is a manager's guide to systems and productivity-tool software, including operating systems, database management systems, telecommunication processors, word processors, spreadsheet calculators, business graphics and draw tools, and — most importantly — integrated software. The decisionmakers who manage today's office systems know that the key to increasing productivity in the 1980s and beyond will be software integration, both within microcomputers and between micros and their more powerful host systems. *The Software Revolution* provides the background and guidelines essential for intelligent, informed software selection and integration in the industrial and office setting.

1985 384 pages cloth 0-444-00876-0 $39.00
(Dfl. 175 outside of North America)

Send orders to:
Elsevier Science Publishing Co., Inc.
P.O. Box 1663
Grand Central Station
New York, NY 10163

In the rest of the world:
Elsevier Science Publishers
Direct Mail Department
P.O. Box 211
1000 AE Amsterdam
The Netherlands

Note: Price subject to change without notice. In NY State, please add applicable sales tax.

Elsevier 5.85

## NEWS

### CALL FOR PAPERS

### 1986 SOCIETY FOR COMPUTER SIMULATION (SCS) MULTICONFERENCE
**San Diego, Jan. 23-25, 1986**

Papers are now invited for this fifth annual computer simulation conference. Areas of interest include practical applications of modeling and simulation on microcomputers in business, engineering, finance, industry, ecology, medicine and science; software and hardware products intended to promote simulation on microcomputers — special modeling packages and computers intended specifically for simulation; tutorials describing methods that can be used on microcomputers and packages that will run on microcomputers; languages, methodologies, statistical packages and other tools intended for use in modeling and simulation on microcomputers.

Papers of special interest might describe models that have many symbolic processes, use heuristic search, have a command structure separate from the knowledge domain and have expertise built into the model as that decisions by the user would be minimized.

Detailed abstracts and special session proposals should be sent by July 1 to SCS, P.O. Box 17900, San Diego, Calif. 92117.

### OFFICE AUTOMATION SOCIETY'S THIRD ANNUAL CONFERENCE
**Minneapolis, Sept. 3-6**

A call for papers has been issued for this third annual office automation conference. Authors should submit papers that are typed, double-spaced, to Jackie Potts, Office Automation Society International, 2106 C Gallows Road, Vienna, Va. 22180. The deadline for the submission of papers for this conference is June 1.

### PTC '86: THE 8TH ANNUAL FORUM OF THE PACIFIC TELECOMMUNICATIONS COUNCIL
**Honolulu, Jan. 12-15, 1986**

Papers are now being sought for this eighth annual telecommunications forum. Papers are requested in each of the three following subthemes: current developments, which will cover a broad spectrum including facilities developments, business aspects, user needs and concerns, regulatory and policy questions, standards and economics. The focus may be on voice, data, video and broadcast topics; future developments, which will focus on probable implementations that will impact telecommunications as well as society in the 1990s and beyond.

Papers should focus on the technological aspects of telecommunications as well as on their possible social, economic and educational impact; and overviews of existing telecommunications training organizations and programs, including discussions of how programs relate to perceived future needs of trainees and users.

A one-page outline of the paper, which should be received by June 15, should be sent to: PTC '86, Suite 308, 1110 University Ave., Honolulu, Hawaii 96826.

### EDP PERFORMANCE MANAGEMENT
**March 1986**

Applied Computer Research, Inc., the sponsor of this seventh annual conference, has issued a call for participation. Applied Computer Research is seeking speakers, panelists and chairmen. No formal papers are required. Key interests are user experiences and case studies presented by data processing managers and their staffs. The deadline for submissions is July 15.

Anyone interested in participating may contact Applied Computer Research, P.O. Box 9280, Phoenix, Ariz. 85068.

SERIX
ANNOUNCING SYSTEM V UNIX™

…puts your IBM Series/1® ahead of the pack!

SERIX is the high performance CMI version of AT&T's UNIX™ System V operating system with Berkeley 4.1 enhancements ported to the IBM Series/1 minicomputer.

SERIX transforms your Series/1 into an even more powerful, flexible, and convenient processor for general data processing, office automation, communications, and process control. Its advantages are outstanding:

Reduced software costs

Long term growth path
- Software is highly portable
- Provides access to a large, growing software base

More power from the Series/1
- Optimizing C compiler uses native code features
- All code reentrant
- Dynamic memory allocation without fixed partitions

Increased programmer productivity
- Large set of utilities
- Hierarchical file structure
- Pipes, forks, semaphores, and shared data segments

Other CMI Series/1 software
- RM/COBOL™
- UNIFY™ database management system
- ViewComp™ spreadsheet
- vi visual editor
- EDX™ to SERIX™ conversion kit

CMI Corporation is a Master Value-added Remarketer of IBM Series/1 equipment. Leasing and other financial arrangements are available.
Contact us for further information.

# OF THE BIG THREE IN BUSINESS SOFTWARE, WHO'S THE REAL NUMBER ONE?

If you know corporate software, you know that only three companies are really capable of offering a "total solution" product line. Everything from general ledger to a PC link with your mainframe.

And if your company's sales are $100 million or more, the amount you're likely to invest in corporate software is of such magnitude you undoubtedly should talk to all three.

Not only will you become a more informed buyer, but a more satisfied owner after you buy.

Our recommendation to shop the big three is offered with confidence. And with certainty that once a competitive evaluation ensues, the chance of your choosing McCormack & Dodge easily exceeds one in three. Because, not long after you begin your analysis, the differences will become apparent. Differences in what each company actually means when it claims to have a total software solution, and a totally integrated software line.

We believe your evaluation will show you this:

Two companies offer the mere appearance of integration. An agglomeration of business applications linked superficially. Through a web of hinges, patches, bridges, shadow files and masks lurking just below the surface.

While one offers the real thing. Millennium. A true family of systems in which the whole works as smoothly as any part. In which every package has the same query mechanism, the same report writers, the same screen generation, the same on-line documentation, security and real-time capabilities. So that when the packages are put together, there are absolutely no borders between them. They fit like pieces in a jigsaw puzzle. Making the most efficient use of all your data processing resources. There's even a Millennium application development tool, so you can create new systems as you need them. Without slow, expensive programming.

Millennium means integration in fact. Not just in name. And it is available only from McCormack & Dodge.

Of the big three in software, who's really number one?

Don't stop asking until you know.

**McCORMACK & DODGE**

McCormack & Dodge, 1225 Worcester Road, Natick, MA 01760
Sales and support offices throughout North and South America, Europe, Asia, Australia and Africa. 800-343-0325. Telex: 710-325-0329

**McCormack & Dodge**
[illegible]

## CALENDAR

## WEEK OF JUNE 16

JUNE 16-17, WASHINGTON, D.C. — AT&T's Software Defined Network and Alternatives. Contact: Melinda Hennessy, The Yankee Group, 89 Broad St., Boston, Mass. 02110.

JUNE 16-19, ST. LOUIS — Compatibles '85. Contact: Denise Warden, Pricom, Inc., P.O. Box 8189, San Rafael, Calif. 94903.

JUNE 17, ORLANDO, FLA. — Symphony Spreadsheets. Contact: Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

JUNE 17, CAMBRIDGE, MASS. — Center for Information Systems Research's 10th Annual Summer Session. Contact: Center for Information Systems Research, Sloan School of Management, MIT, 77 Massachusetts Ave., Cambridge, Mass. 02139.

JUNE 17-19, ORLANDO, FLA. — IDMS Systems Generation and Tuning. Contact: Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

JUNE 17-18, TORONTO — Planning Corporate Communications Networks. Contact: Sheridan College of Applied Arts & Technology, Conference Centre, Trafalgar Road, Oakville, Ont. L6H 2L1, Canada.

JUNE 17-18, WELLESLEY, MASS. — Data Analysis Workshop. Contact: QED Information Sciences, Inc., P.O. Box 181, Wellesley, Mass. 02181.

JUNE 17-19, DETROIT — Managing Application Software Support Workshop. Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

JUNE 17-19, VANCOUVER, B.C. — EDP Auditing and Controls. Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

JUNE 17-19, VANCOUVER, B.C. — Auditing Advanced Computer Systems. Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

JUNE 17-19, VANCOUVER, B.C. — The Auditor's Role in Systems Development. Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701

JUNE 17-19, BOSTON — Long-Range Information Systems Planning. Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

JUNE 17-19, PHILADELPHIA — Administrative Management Society (AMS)/Penn Expo. Contact: AMS, c/o 118 Avant Garde, Kenner, La. 70065.

JUNE 17-20, WASHINGTON, D.C. — Association of Information Systems Professionals' Syntopican XIII Annual Office Automation/Information Systems Conference and Exposition. Contact: James J. Dunn, 1015 N. York Road, Willow Grove, Pa. 19090.

JUNE 17-20, NEW YORK — The National Data Base and Fourth-Generation Language Symposium. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810.

JUNE 17-21, CHICAGO — CICS Command-Level Programming. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.

JUNE 17-21, NEW YORK — MVS JCL. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.

JUNE 17-21, NEW YORK — CICS Macro-Level Programming. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.

JUNE 17-21, WELLESLEY, MASS. — Systems Design Workshop. Contact: QED Information Sciences, Inc., P.O. Box 181, Wellesley, Mass. 02181.

JUNE 17-21, NEW YORK — Communications Week '85. Contact: Datapro Research Corp., McGraw-Hill Information Systems Co., 1221 Ave. of the Americas, New York, N.Y. 10020.

JUNE 18, ORLANDO, FLA. — Symphony Graphics. Contact: Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

JUNE 18-19, SAN FRANCISCO — SAS Report Writing Course. Contact: SAS Institute Inc., Box 8000, SAS Circle, Cary, N.C. 27511.

JUNE 18-20, ROSEMONT, ILL. — 1985 Advanced Manufacturing Systems Exposition & Conference. Contact: Online Conferences, Inc., 989 Ave. of the Americas, New York, N.Y. 10018.

JUNE 19, ORLANDO, FLA. — Symphony Data Management. Contact: Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

JUNE 19-21, ORLANDO, FLA. — IDMS Data Base Administration. Contact: Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

JUNE 20, ORLANDO, FLA. — Symphony Data Communications. Contact: Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

JUNE 20-21, WELLESLEY, MASS. — Data Base Design. Contact: QED Information Sciences, Inc., P.O. Box 181, Wellesley, Mass. 02181.

JUNE 20-21, ORLANDO, FLA. — CICS Transaction Design. Contact: Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

JUNE 20-22, OTTAWA — Canadian Business Equipment Manufacturers Association 1985 Annual Conference. Contact: George Nutter, Canadian Business Equipment Manufacturers Association, Suite 300, 211 Consumers Road, Willowdale, Ont. M2J 4G8, Canada.

Artificial Intelligence
& Personal Computers

Artificial Intelligence & Personal Computers
June 10-11

Hyatt Regency Reunion, Dallas
Sponsored by Computer Retail News and InformationWEEK.

The personal computer market offers the most valuable opportunities for artificial intelligence technology.

But when will this emerging technology be available for personal computers?

And what are the strategic implications for decision-makers today?

Find out at *Artificial Intelligence & Personal Computers*, June 10-11 at the Hyatt Regency Reunion in Dallas.

It's the first industry event to focus on the impact of artificial intelligence on the personal computer industry.

*Artificial Intelligence & Personal Computers* features Future Computing senior staff and top executives from companies in the personal computer and artificial intelligence industries. They'll discuss:

☐ AI hardware requirements
☐ personal computers as target vs. development machines for AI applications
☐ personal computer capabilities in 1990
☐ the current state of commercial expert systems
☐ personal computer based development tools
☐ productivity and decision support system features
☐ AI as the basis for new software applications
☐ distribution channels for knowledge-based products
☐ future trends in AI and the personal computer industry

FUTURE COMPUTING INCORPORATED McGraw-Hill

Forum Speakers

Peter L. Gabel, President
Arity Corporation

Paul Robertson, Chairman
Artelligence, Inc.

Larry Geisel, President
The Carnegie Group

Dr. Ernest Forman, Dir. of Research & Development
Decision Support Software

Norton R. Abel, Mgr. AI Technical Group
Digital Equipment Corporation

Esther Dyson, President
EDventure Holdings, Inc.

Stan Curtis, President
Gold Hill Computers, Inc.

Ralph E. Kemper, President
IntelliCorp

Dr. S. Jerrold Kaplan
Consultant

Thomas J. Garnett, President and CEO
Lightyear, Inc.

Stephen G. Cary, Sr. Editor, Computers & Software
McGraw-Hill Book Company

Alan Hald, Chairman of the Board
MicroAge Computer Stores, Inc.

Wayne J. Erickson, Chairman & CEO
Microrim

Dr. Gary Goodman, Dir. of Research & Development
Scott Instruments Corporation

Alvin Berkowsky, Vice President Marketing
Silogic, Inc.

Jim Spoerl, Group Mgr., Product Marketing
Symbolics, Inc.

David C. Squire, AI Program Mgr.
Tektronix, Inc.

Carroll Hall, Mgr., AI Applications
Texas Instruments

Joe Watson, V.P., Digital Systems Group
Texas Instruments

Dr. Jack B. Levine, President
Thoughtware, Inc.

Bruce Shiel, Mgr. Product Development
Xerox AI Systems

Dr. Egil Juliussen, Chairman
Future Computing Incorporated

Dr. May Lewis, Sr. Analyst, Products Group
Future Computing Incorporated

Tim Williams, Sr. Analyst, Markets Group
Future Computing Incorporated

Registration Form
To register, complete and mail this form. Or call us at 214 437-2400.

Customer Service
Future Computing Incorporated
8111 LBJ Freeway
Dallas, Texas 75251

Please register me for *Artificial Intelligence & Personal Computers.*

Name ____________
Title ____________
Company ____________
Address ____________
City ________ State ______ Zip ______
Phone (      ) ____________

Fees & Payment Information
The registration fee for *Artificial Intelligence & Personal Computers* is $800. All orders are subject to acceptance by Future Computing Incorporated. Prices are subject to change without notice. Make checks payable to Future Computing Incorporated.

Qty Price Amt
____ $800 ____
____ $600 (service client price) ____
____ Prepaid (forum pass) ____
Total ____

☐ Check enclosed
☐ American Express
☐ MasterCard
☐ VISA
☐ Diners Club
☐ Please invoice (approved credit required)

Credit card no. ____________
Name on card ____________
Expiration date ____________
P.O. # ____________

[illegible] CW

# MORE THAN 800 LARGE NETWORK USERS DON'T HAVE TO FIT NCR COMTEN.

# NCR COMTEN FITS THEM.

There are two basic choices in developing a data communications network: you can compromise your objectives to fit the limitations of the system; or you can choose a system with a flexibility to accommodate your needs.

NCR Comten gives you the latter option. Our Communications Network Architecture lets you accommodate yesterday's and today's technologies in your present network and anticipates future and emerging technologies without major equipment change.

Fitting our system to your needs is just part of the NCR Comten story. You'll find more good reasons in our special executive briefing. For details, write "Data Communications Systems", NCR Comten, Inc., Department 8015, 2700 Snelling Ave. N., St. Paul, MN 55113. **Or call 1-800-334-2227. In Canada, call 1-800-543-5713.**

**NCR COMTEN. KNOWN BY THE COMPANIES WE KEEP.**

NCR

NCR Comten, Inc.

# EDITORIAL

## Much ado

The most interesting news by far to come from the otherwise lackluster Comdex/Spring '85 was IBM's confirmation of plans to bundle software packages free of charge with Personal Computer XT sales, at least for a limited time [CW, May 13]. Although IBM bristles at hearing the term "bundling," we can't think of a better description.

Reaction from the vendor and dealer communities was predictable, ranging from outrage to taciturn recognition of IBM's plans to be No. 1 in every market niche in which it operates — meaning the company will strive for first place in every computer market niche.

It is surprising that anyone, particularly IBM's competitors in the micro software arena, should have been taken unaware by the move at all. It's not that the move was predicted — it wasn't. Rather, the strategy will help move a piece of hardware, that may not be selling as fast as Big Blue would like, as well as software packages that are playing second and third fiddle to other software vendors' offerings. This position can only be viewed as very uncomfortable by a company accustomed to dominating its competitors and is therefore a harbinger of such "drastic" actions as bundling a couple of diskettes with hardware.

Some of the more peeved competitors tried hard to raise the specter of antitrust in the matter. In this case, such charges are not only ridiculous (IBM hardly dominates the micro software market, which is about as competitive as any in the computer business), but they also ignore the more apparent realities of doing business.

IBM's competitors should try to see the situation for what it really is — namely, one company practicing competition and capitalism better than perhaps any other company does.

And that is the key to what struggling and successful micro software and hardware companies must do to survive in an IBM-dominated world. Users cry for site licensing and cheaper packages for corporate mass packages, but many vendors offer them cumbersome lock-and-key antipiracy systems. IBM — for a little while anyway — gives away the software. Get the picture?

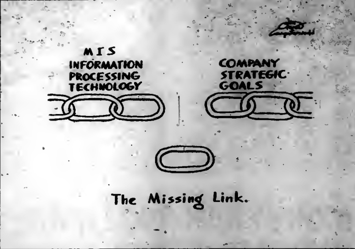
■

We may be the No. 1 weekly serving the computer community, but that doesn't stop us from continually trying to upgrade our publication. In this vein, we recently added to *Computerworld* two features, both designed to give our readers quick blasts of information in a concise format.

Our Random Access column was launched last month and will appear most weeks on page 2. The column will consist of brief items regarding product information, industry rumblings, vendor plans and other snippets of information gathered from reliable sources but which often have not been released for general consumption. We hope this column will give our readers the benefit of the ad hoc leads our reporters develop.

Last week on page 6 we ran Reporter's Notebook, a feature consisting of general-interest news briefs gleaned from *Computerworld*'s extensive conference and computer show coverage. Reporter's Notebook, to be run irregularly, seeks to give readers a glance at the mood, points of interest and general tenor of a conference.

We trust you'll enjoy both additions, and we welcome your comments.



## LETTERS

### Suggested software rental bans rapped

Efforts by selfish special interest groups that wish to have a law passed against renting software could not be more contrary to the capitalistic ideal. These groups were discussed in the column "Proposed software rental ban warrants careful review" [CW, March 25]. Why single out one industry or one class of product and say it cannot be rented when all other products in other industries can be rented?

These groups' motivation seems to be the high incidence of piracy in the software business. However, the pirates are not to blame — the software companies are. For the same reason that banks do not leave their money on the sidewalk, software companies have an obligation to protect their products. Software companies lacking the technological capability to do this should get into some other line of work.

My company has shipped thousands of software products, none of which has been copied and none of which has been installed on more than one machine. My company does this because most of its customers prefer to rent.

Some companies cannot afford the capital outlay of purchasing software and prefer to rent on an ongoing basis, just as some people prefer to rent rather than purchase their dwellings. Refusing someone shelter because he cannot afford to buy a dwelling would not make sense from either an economic or a moral standpoint.

David E. Ferguson
Malibu, Calif.

COMPUTERWORLD

Donald E. Fagan
Publisher

Editor
John C. Whitmarsh

Executive Editor
Rita Shoor

Managing Editor
Bill Laberis

Asst. Managing Editor
Donovan White

Senior Editors:
Software
John Gallant
Microcomputers
Eric Bender
Communications
John Dix
Systems
Tom Henkel
Industry
Peter Bartolik
Features
George Harrar
Design Editor
Marjorie Magowan
Asst. Design Editor
Michael J. Hayes
Special Projects Editor
James Connolly
Update Editor
Glenn Rifkin
Director - International
News Services
Susan Blakeney

Asst. Features Editor
Elisabeth Horwitt
Special Reports Editor
Janet Fiderio
Asst. Special Reports Editor
Becky Batcha
Senior Writers
Paul Korzeniowski
Edward Warner
Staff Writers
John Desmond
Maura McEnaney
Donna Raimondi
Clinton Wilder
Correspondents:
New York
Correspondent
Charles Babcock
Paramus Plaza I
140 Route 17 N.
Paramus, N.J. 07652
201/967-1350
Washington, D.C.
Senior Correspondent
Bryan Wilkins

Correspondent: Mitch Betts
1273 National Press Bldg.
529 14th St., N.W.
Washington, D.C. 20045
202/347-6718
West Coast
Bureau Chief: Jeffry Beeler
Correspondents:
Kathleen Burton
Kathleen Sullivan
1060 Marsh Rd.
Menlo Park, Calif. 94025
415/328-4591
Chief Copy Editor
Charlotte Zoino
Asst. Chief Copy Editor
Lory Zottola
Copy Editors:
Christine Casatelli
Deborah Fielding
Pamela Hart
Penny Jasmin
Kelly Shea
Joseph Stehey
Barbara Sutton
Kimberly Valleeh

Asst. to the Editor
June Fettig
Editorial Assistants
Lorraine Ryan
Patricia Flaherty
Nancy Sherman
Cheryl Tynan
Contributors
Human Connection
Jack Stone
Turnaround Time
Lary Long
Microcomputing
Thomas Madden
The Data Center
John P. Murray
Lecht on Software
Charles P. Lecht
Management Checklist
Walter F. Cole
Washington Wildground
Amy Wohl
Special Publications
Computerworld Focus
George Harrar, Editor
Computerworld Focus
Ann Dooley,
Editorial Director

Main Editorial Office: Box 880, 375 Cochituate Road, Framingham, MA 01701 617/879-0700

*Computerworld* is a member of the CW Communications/Inc. group, the world's largest publisher of computer-related information. The group publishes 55 computer publications in more than 20 major countries. Nine million people read one or more of the group's publications each month. Members of the group include: Argentina's *Computerworld/Argentina*; Asia's *The Asian Computerworld*; Australia's *Computerworld Australia*, *Australian PC World* and *Macworld*; Brazil's *DataNews*, *MicroMundo*, and *PC Mundo*; China's *China Computerworld*; Denmark's *Computerworld/Danmark*, *PC World* and *Run (Commodore)*; Finland's *Mikro*; France's *Le Monde Informatique*, *Golden (Apple)*, *OPC (IBM)* and *Distributique*; Germany's *Computerwoche*, [illegible] *Computer Business*, *Run* and *Apple's*; Italy's *Computerworld Italia* and *PC Magazine*; Japan's *Computerworld Japan*; Mexico's *Computerworld/Mexico* and *CompuMundo*; The Netherlands' *Computerworld Benelux* and *PC World Benelux*; Norway's *Computerworld Norge* and *PC Mikrodata*; Saudi Arabia's *Saudi Computerworld*; Spain's *Computerworld Espana*, *PC World* and *Commodore World*; Sweden's *ComputerSweden*, *Mikrodatorn*, and *Svenska PC*; the UK's *Computer Management*, *Computer News*, *PC Business World*, and *Computer Business Europe*; Venezuela's *Computerworld Venezuela*; the U.S.'s *Computerworld*, *Hot CoCo*, *InCider*, *Infoworld*, *MacWorld*, *Micro Marketworld*, *PC World*, *Run*, *73 Magazine*, *80 Micro*, [illegible]

# Identifying, tracing reruns cuts expenses

THE DATA CENTER
John P. Murray

Does your data center experience considerable difficulty in meeting its schedule commitments? Are clients unhappy with its service level? Does the pressure within the data center seem to increase faster than would appear warranted by the increase in work load? Is data center overtime expense a serious factor because it always seems to exceed the budget, sometimes by a considerable amount?

These concerns may be caused by a variety of factors, but it is likely that one factor, often the major factor in such a situation, is the rate of reruns of data center production work.

Do you know how many of your resources are devoted to reruns? Does anyone know the precise number and reason for reruns for a given period? What, if anything, is being done to control reruns? Are reruns even considered an important factor in your installation, or are they simply viewed as something to be tolerated, or worse yet, ignored?

An important aspect of the effective management of the data center operation is the ability to identify and control reruns. The obvious reason is to help conserve the usually scarce hardware resources and to additionally assist in the effort to decrease the ever-present time and schedule pressures found in all data centers. The less obvious yet perhaps just as important issue involves improving the quality of the data center operation and consequently the entire DP function.

There is a similarity between the operation of the data center and that of a manufacturing function. Many of the aspects of a manufacturing operation can also be found in the data center. A critical aspect of a manufacturing operation is the control of scrap.

Without careful factory management, scrap loss can become an expensive item. Reruns constitute that scrap problem for the data center. In fact, reruns are a bit more serious in the data center because some of the resources invested in the scrapped material in the factory often can be reworked. In the data center, every rerun represents a total loss; there is no chance for any rework or recovery of any of the resources.

> *Every rerun represents a total loss. A high incidence of data center reruns — anything in excess of 2% or 3% of total jobs and total real-time hours — is an indication of poor data center management.*

A high incidence of data center reruns — anything in excess of 2% or 3% of total jobs and total real-time hours — is an indication of poor data center management. It also may indicate a poor job of managing the entire information processing function. This is because many places, not just the data center, are responsible for reruns, which are often symptomatic of problems in other areas.

Is the requirement for a particular rerun the result of a data center error? Is it because of an incorrect JCL? Is it the result of a programming error? Of poor documentation? Might it owe to a data input error? An incorrect date perhaps?

Those to whom the data center manager reports need to understand the numerous conditions that can cause reruns, and these people must be willing to designate importance to reducing the reruns.

Excessive reruns indicate an information processing department's poor health. Unless some method is in place that can be used to identify reruns as well as their causes, improving the health of the data center is impossible. Because the consequences of a high rate of reruns — poor data center service levels, failure to meet data center schedules and increasing pressure on the data center, for example — fall upon the data center manager, it is in his best interest to locate the problem and develop a plan to correct it.

**Recognize reruns as a concern**

The first step then is to admit that reruns are an area of concern. The next step is to capture information about the number of reruns in any given period. What constitutes a rerun? If the data center uses separate systems for testing and production, any job in the production system processed more than the scheduled number of times in any given period will be charged with reruns for any jobs in excess of the scheduled number.

Periodic reports should be produced to show the number of reruns for the period, the reasons for those reruns and the amount of CPU and real time associated with each rerun. The report should receive a sufficiently wide distribution so that those areas responsible for the reruns are alerted to the fact that they have caused reruns and that an effort is under way to reduce the incidence of reruns. This is an effort to raise the level of interest in the rerun problem, and it should be made clear that the management of the information processing department supports the effort.

In addition to identifying the reruns and the CPU and real time associated with them, the re-

See RERUNS page 38

*Murray is director of management information services for Bergstrom Corp., Neenah, Wis., and author of Management Information Systems as a Corporate Resource, published by Dow Jones-Irwin.*

# A little help can make maintenance's job less thankless

MANAGEMENT MATRIX
Walter F. Cutrie

Software maintenance is one of those thankless jobs that no one acknowledges when it's done right and everyone notices when it's not. For newly installed systems, part of the job of the maintenance group is to track down and get rid of the remaining bugs, but regardless of the number of bugs, the development people usually get the credit. Once a system is settled, maintenance gets to make the changes the user wants, one after another, until the system is replaced and the whole cycle begins again.

If there is anything more thankless than being in a software maintenance group, it is supervising one. Of course, on the positive side, the job does build character. Good maintenance supervisors become like good cops — unflappable, level-headed and not surprised by anything people do and skeptical of everything people say — the kind of person you would trust to help you buy a used car or sign off on a new system.

Next time you make the rounds, stop in at the maintenance supervisor's office. Instead of "in," "out" and "pending" baskets on the desk, are there bins labeled "possibly," "probably" and "given up"? Does the plaque on the wall read "Sisyphus had it easy"? Is there a hair shirt on the coat rack? If so, maybe a few things can be done to help.

> *Next time you make the rounds, stop in at the maintenance supervisor's office. Does the plaque on the wall read "Sisyphus had it easy"? Is there a hair shirt on the coat rack? If so, maybe a few things can be done to help.*

From assuming that you have a stable and bug-free system, the [illegible] of the maintenance group is [illegible] of providing user [illegible]; the problem isn't [illegible] to [illegible] these changes as it is in managing them. The first step in that management is one many DP shops have taken: Establish some kind of a paperwork procedure that requires the users to submit these change specifications in some kind of uniform format — a change order system. But this is only the first step.

Users often have little feeling for the relative complexity of a change. In most cases, users can only specify changes from their own perspectives — the rearrangement of items on an existing screen or the addition of a line to a report to accommodate a new item, for example. Some of these requests really represent major substantial changes to the software; others do, even if they look the same. The DP manager and maintenance supervisor are aware of that, but the user may not see the essential difference between adding a new field, however small, to an existing data entry system and changing the layout of a screen. This misunderstanding gives rise to billing and scheduling arguments.

Another problem is that these changes come at odd times and in unpredictable quantities and if they have any priorities set on them at all, they are set by the users. Usually it's a simple "rush." In short, the maintenance function becomes user driven when it should only be user specified. User-driven maintenance results in a system that gets revised far too often and for conflicting reasons.

It is beyond the power of the maintenance supervisor to do anything about these problems. However, the DP manager does have the power and can get together with the manager of the users' department to make things easier all around. One simple, effective solution is to go to fixed periods to implement the changes.

Suppose the DP manager and users' department manager agree that [illegible] will only be installed quarterly and that there will be a firm deadline for the submission of change orders — say the middle of each quarter. If the user agrees to this, the DP manager can promise that, between the submission deadline and the end of the quarter, the

See [illegible] page 38

*Cutrie is a senior associate with Nicholas [illegible] Associates in Bryn Mawr, Pa.*

# Copy-protecting software addresses wrong problem

**READER'S PLATFORM**

Robert V. Jacobson

The current discussion of software piracy seems to have missed a key point. Every prudent manager regularly makes backup copies of his mainframe systems and applications software for all the well-known reasons. These same reasons apply to software, which is run on the manager's microcomputers. A manager who relies on software that he cannot back up is not prudent.

There is an inescapable conclusion: Regardless of whatever other features a software package may have, it just doesn't make sense to buy copy-protected software.

Arguments that support piracy on the grounds that software is too expensive are childish. Every software developer is entitled to protect his ownership rights. If a package is too expensive, market forces will quickly come to bear.

The real issue is how to satisfy the backup requirement and protect the software vendor's property rights at the same time.

Business software should be available without copy protection. Vendors should offer licenses for several levels of usage — single-user, two to 10 simultaneous users, 10 to 99 users and 100 or more users at a single site — at appropriately increasing prices with manuals available at cost more or less.

Software licensees should expect to sign and return multiple-use license agreements and to abide by their terms.

Businesses and government agencies must make it clear to employees that software piracy is illegal and contrary to policy. A number of firms are already doing so [CW, Feb. 4], and more should follow suit.

### Policing attempts futile

Most firms and most employees are honest and can be expected to adhere to license agreement terms, but there is no realistic way vendors can expect to police outstanding license agreements. Because honest firms should not be expected to subsidize dishonest firms — which is the real effect on piracy — software vendors should make a reasonable effort to identify and stop the pirates.

Unfortunately, the only practical method seems to be the use of informers. Consequently, vendors — perhaps working through a trade association — should offer substantial rewards for information leading to conviction for piracy.

Copy protection is a futile exercise to solve the wrong problem. Ultimately, software must reside in main memory in an executable form. This means that it can and will be copied by the pirates no matter what the vendor does.

Inevitably, it is the honest user who suffers, because ultimately he is paying for the copy protection, the pirated copies and, worst of all, the risks of running with software that is not backed up. ‡

*Jacobson is president of New York-based International Security Technology, Inc.*

---

**LETTERS**

## Bypass point misleading

Your recent series on bypass was excellent. Generally, I agreed with the editorial "Opportunity calling" [CW, April 22] — an editorial that took a balanced look at divestiture.

The editorial stated that "divestiture did not make bypass possible." Although correct, that statement may also be misleading. Divestiture made bypass economically attractive for many customers. Before divestiture, AT&T had no incentive to bypass. AT&T could bypass in 1983 but, if it had done so, it would have lost money.

Before divestiture, MCI Communications Corp. and GTE Sprint Communications Corp. received local access at lower rates than they are charged today in areas where equal access has been made available. Divestiture created the incentives for massive bypass — incentives that did not exist before divestiture.

The largest part of the bypass problem has grown out of the fact that regulators require local telephone companies to charge far above cost for local-access service. This artificial pricing speeds the adoption of bypass and amplifies the economic shock when a large customer installs a bypass system.

My firm's study of bypass, commissioned by Bell Atlantic, shows that the vast majority of projected revenue loss due to bypass is caused by this uneconomic pricing of local-access service. The bypass problem, with its potential for stranded investment and unfair charges to small businesses and residential users, arises from an attempt to maintain a system of subsidies for local service,

-See LETTER page 39

The #1 3270 alternative for people who want flexibility.

CH

The need for a 3270 alternative shouldn't replace the need for keeping your terminal system flexible, your options open. That's why the #1 choice is Telex.

Look to Telex, and there's a lot to look at. In fact, next to IBM nobody sells more 3270 displays, printers, controllers and intelligent workstations than Telex. And for maximum flexibility Telex's wide range of terminals plug directly into Telex or IBM controllers. There's a choice of high-speed matrix or letter-quality output devices and easy-to-use, low-cost display printers, too.

But product selection isn't the only choice. Telex displays offer features like color graphics, monochrome or color monitors, and ergonomic tilt/swivel design. There's a selection of keyboards,

## LETTER

from page 38

which cannot be sustained in the postdivestiture world.

Not until we all recognize the need to restructure telephone prices to match the needs of the postdivestiture world can the bypass problem be solved.

**Charles L. Jackson**
**Washington, D.C.**

## Legislation vs. a day's work

As a DP manager for the City of Baltimore, responsible for computer operations, data control and data entry, I have, of course, been following with keen interest the VDT "imbroglio," aptly described so in the article "VDT imbroglio shifts to state legislatures" [CW, March 25].

There have been studies by impartial scientific organizations, vendor associations and the unfounded and ever-present collective bargaining groups and unions.

However, putting aside for the moment the relative validity of any of these "studies," much is being made about nothing. I make such a brash statement because in all of the studies I have read, much ado is made about the eyestrain or potential eyestrain and the "refreshment" frequency of the CRT, but at no time whatsoever have the studies mentioned the real world cause of any eyestrain that may be part and parcel of the job. The eyestrain, if any, is not caused by looking at the CRT but rather at the source material the key operator is entering.

A proficient key entry operator spends very little time looking at the CRT. As much as [illegible]% to [illegible]% of an operator's workday is spent looking at and interpreting what someone else has hand-coded on some source document in much the same manner as a keypuncher or a typist would. This contact totals 96 minutes looking at the document and 42 minutes interpreting it in our 7.33-hour workday. Subtract from that the scheduled breaks and the low-end figure becomes the more prevalent.

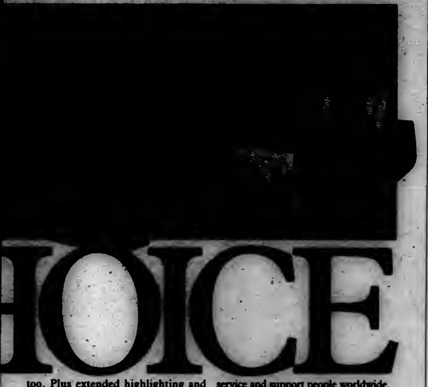
Aside from the fact that the operator is indeed sitting in front of the VDT, the impact of which has yet to be determined, we essentially have nothing more than the ergonomic considerations that we should all afford our typists and word processors. Essentially, it all boils down to using a common sense, humanistic approach toward the employee, his environment and quality of work life.

We are all bombarded every second of every day by radio waves, TV waves and microwaves, not to mention solar radiation. Maybe pregnant women should not sit in front of a VDT; we just don't know at this time. We do know that they should not smoke because it's been determined harmful to the mother and the baby, but many still do.

I had an opportunity to review a bill [H.B. 1258] that went before the Maryland legislature this year concerning VDT standards. Although it failed to pass this session, I'm positive it will return in succeeding years with the same oppressive restrictions to bear against the employer and vendor alike. If this bill is indicative of other legislative proposals, on a nationwide scale, then I urge DP managers to think of alternative methods of feeding those batch applications.

Certainly some type of standard may be required for machine construction and use, but it is this manager's opinion that if legislation of this type is allowed to pass as written and unchallenged by the general DP community, employers will have effectively abandoned their right to expect a fair day's work for a fair day's pay.

**Robert E. Gronis**
**Baltimore**



too. Plus extended highlighting and light pen capability. Telex also offers controllers that support local print buffering, format storage and dual host communications.

There's a choice of service plans, too. Backed by over 2,000 Telex-dedicated service and support people worldwide.

No wonder more and more companies are making Telex their 3270 alternative . . . It's the #1 choice.

For more information, contact John Hawkins, 6422 E. 41st Street, Tulsa, OK 74135/1-800-331-2623.

The #1
3270 Alternative
TELEX
TELEX COMPUTER PRODUCTS, INC.

## CUIRLE

from page 37

maintenance staff will do two things: It will work up firm cost estimates and installation dates for the changes, grouping them as appropriate; and it will write the software equivalent of an environmental impact statement. This statement explains the relative complexity of the change and its possible risks. It is an important part of the deal because it justifies the costs to users by telling them for what they are really asking. This way, users can make informed decisions about whether or not they really want a change, and the DP manager is no longer driven solely by users' uninformed priorities.

Users benefit because they know exactly what they are getting, when they will get it and what the costs will be in performance and money. The maintenance staff benefits because only four firm implementation dates exist for each system. The staff now has the chance to test the revised system as a stable piece of software before it goes on-line; this should end the vicious cycle of bug maintenance on change maintenance.

And in the process, something ought to be thrown in for the maintenance supervisor. A new shirt perhaps?

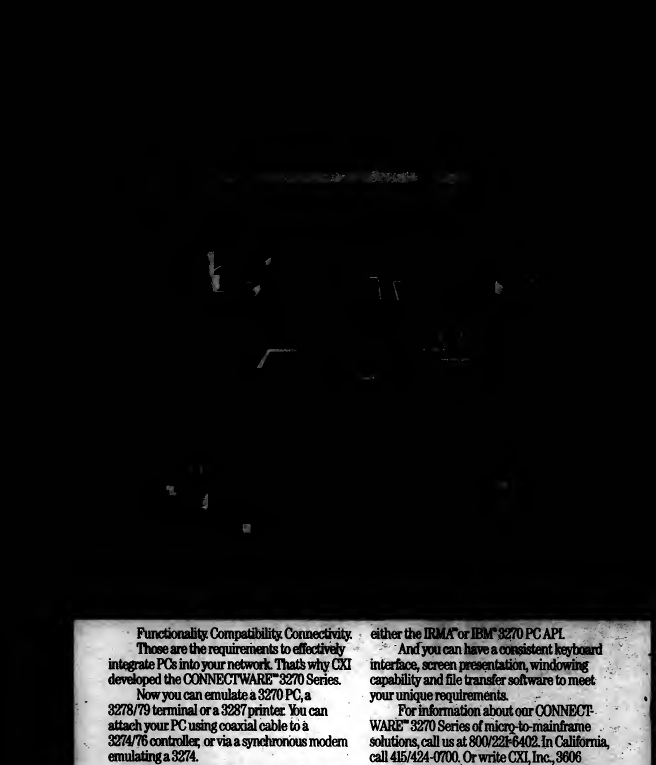
## RERUNS

from page 37

port should show the dollar value (using the CPU hourly rate) of the various reruns. This practice can serve as a tool to gain the client attention required for rerun problems to be taken seriously.

Addressing the rerun problem is not easy. If carried out aggressively, the move may generate hostility. The management of the data center must recognize this aspect of the effort but should not be deterred by it from moving ahead.

If reruns are attacked and reduced, everyone will benefit. It is worth the effort; good management will insist that it be done.



Functionality. Compatibility. Connectivity.

Those are the requirements to effectively integrate PCs into your network. That's why CXI developed the CONNECTWARE™ 3270 Series.

Now you can emulate a 3270 PC, a 3278/79 terminal or a 3287 printer. You can attach your PC using coaxial cable to a 3274/76 controller, or via a synchronous modem emulating a 3274.

CXI even provides a uniform application program interface (API) across all of its products and also provides, on selected products, either the IRMA™ or IBM® 3270 PC API.

And you can have a consistent keyboard interface, screen presentation, windowing capability and file transfer software to meet your unique requirements.

For information about our CONNECTWARE™ 3270 Series of micro-to-mainframe solutions, call us at 800/221-6402. In California, call 415/424-0700. Or write CXI, Inc., 3606 West Bayshore Road, Palo Alto, CA 94303 TELEX 821945.

CXI

We don't have all the answers, just more of them.

CONNECTWARE is a trademark of CXI, Inc. IBM is a registered trademark of International Business Machines Corp. IRMA is a trademark of Digital Communications Associates, Inc. © 1985, CXI, Inc.

# Careful planning eases conversion to MVS/XA

By John Gallant
CW Staff

It may appear to be a gargantuan undertaking, but an upgrade to IBM's MVS/XA operating system can go relatively smoothly — provided the conversion is carefully planned.

That was the finding of a recent Xephon Technology Transfer Ltd. study of nearly 30 large IBM sites that had undergone the migration from another of Big Blue's operating systems to MVS/XA. Despite the fact that most respondents made the move to MVS/XA to ease virtual storage constraints, the Newbury, England-based market research firm found that IBM's flagship operating system provides only relief, not a cure, for the ills of virtual storage cramp.

"Conversion is one of the great bogies of the IBM environment," the study stated, "and IBM has gone to greater lengths to minimize the problems of converting to XA [Extended Architecture] than it has for any other product.

"The initial announcement of XA, for example, gave users explicit details of the [timetable] for product availability, restricted the impact of the change by offering compatibility of user applications between new and old operating regimes and gave . . . details of how users could position their configurations to ease conversion to XA," the study said.

Based on the experiences of 29 users who upgraded to MVS/XA between 1983 and mid-1984, Xephon cautioned that proper positioning is a paramount prerequisite to a successful conversion. Xephon defined positioning as having all necessary versions of ancillary software installed so they can be transferred to MVS/XA without modification.

See UPGRADE page 43

SOFTLINE/DAVID TORY

# One-vendor solution can pay off

In the less-complex DP environment of just a few years ago, it was easy for technical managers and systems programmers to rely on their own skills for planning, maintenance and problem resolution, as well as for dealing with multiple software vendors.

Today, data centers are more complex by orders of magnitude. With more computing power available, a greater demand for service and stretched management and personnel resources, DP professionals can no longer afford to depend upon business solutions and service from a combination of in-house and diverse, incompatible external sources.

This complexity is one of the reasons for the growing popularity of the single-vendor, integrated software solution. DP executives claim that the more products they have from one vendor, the greater the effect they have on service, support, development and integration of the software.

DP executives will have to choose their software vendors more carefully as the trend toward single-vendor shops continues.

Choosing a single vendor for global DP needs involves careful evaluation. The rewards are great, but the pitfalls can be costly.

If the wrong vendor is chosen, one

See SINGLE page 44

*Tory is senior vice-president of Jericho, N.Y.-based Computer Associates International, Inc., a vendor of integrated software products.*

SOFTALK
John Desmond
CW Staff Writer

# Programming by the rules

Just as the English language has rules of grammar, so programming languages have rules of discourse. And just as a violation of English rules may prevent a message from being clear, a violation of programming rules may make a program difficult to understand and thus maintain.

Software programmers don't use adverbs, adjectives or gerunds, but they do write. Each programmer projects into the program's structure a mental image of how it should look. If the programmer's construct violates generally accepted programming rules, the code is likely to confuse an experienced analyst who tries to debug or enhance the program.

Soloway

Extracting programming rules from the minds of programmers, which is where many of them reside, is a key aspect of research being conducted by Elliot Soloway of Yale University in New Haven, Conn.

The assistant professor and artificial intelligence researcher spoke on "Why Software Maintenance is Hard" at the Data Processing Management Association's recent conference on maintenance in Dallas.

"There's a big difference between knowing what an IF statement is and knowing how to program," Soloway said. The Yale researcher has conducted a number of experiments using two versions of a program: a correct version

See PROGRAM page 45

■ Desperately seeking software — Unix vies for market position/42

■ An updated version of its data center management software was unveiled by Uccel/42

■ Foothill Research announced an enhancement to its programming language for Unix systems/43

■ Informatics General introduced an ISPF option for its Mark IV development system/43

■ Database Design announced an enhanced logical data modeling tool for MVS/TSO/44

ELECTRONIC MAIL COMMUNICATION CENTER

*Lightyears Ahead . . .*

The ONE electronic mail product that links all major operating environments: MVS, VSE, VM, CMS, CICS, TSO, ACF...

Emc² is easy to use. It's designed to get the mail moving *fast.*

Emc² functions as a super-efficient ACF/VTAM application. This allows literally thousands of people in your company to use mail without needing TSO, CICS, or CMS user IDs!

- Full-screen menus and help panels
- Scrollable inbaskets and outbaskets
- Uncomplicated text entry
- Mailing lists
- Bulletin boards
- Calendar features
- Timely Reminders "tickler file" (arrange for messages to be sent at some future date)
- Automatic new-mail notification
- Mail classes (partition Emc² into virtually separate mail systems)
- Efficient data base storage
- Simple installation
- Low administrative overhead
- Application programming interface

*PLUS*
- Electronic mail *networking* between mainframe sites
- *Integrated PC support* and integrated PC file transfer

CALL TODAY FOR MORE INFORMATION, OR TO SET UP A FREE TRIAL: 800-237-4510 In Florida, call 813-793-1500

FISCHER INNIS SYSTEMS CORPORATION
475 MERCANTILE AVENUE • NAPLES, FLORIDA 33942

Copyright © 1985 by Fischer-Innis Systems Corporation

Electronic Mail Communication Center and Emc² are trademarks of Fischer-Innis Systems Corporation.

# Unix needs push to win in corporate micro market

Yates

**By Kathleen Sullivan**
**CW West Coast Bureau**

SAN JOSE, Calif. — In the personal computer market, software has been a driving force. Software Arts, Inc.'s Visicalc helped ensure the success of the Apple Computer, Inc. Apple II, while Lotus Development Corp.'s 1-2-3 propelled sales of the IBM Personal Computer. But in the AT&T Unix systems market, according to industry analyst Jean Yates, software has not yet served as such a catalyst.

That situation must change if Unix-based systems hope to win a place on the corporate desktop, said Yates, chairman of Yates Ventures, Inc., speaking before a recent seminar audience here.

Although there are hundreds of software packages available for a variety of Unix-based systems, none have captured the imagination or the allegiance of users, she said. According to Yates, the market is crying out for an innovative software package that will push Unix forward.

### 'Blowing its opportunity' in the office

"Unix software has not proven itself in the desktop market," she said. It has met with greater success in the scientific and engineering communities and is appreciated in government and military circles. But the product is "blowing its opportunity" in the office, she noted.

Describing the problem as the "1-2-3 syndrome," Yates said software availability will remain a key factor in the growth of the desktop Unix market. "If we don't get a [product like] 1-2-3 for Unix, I hope AT&T will get down on its knees to Lotus," she said. "Why would someone buy a desktop computer without a program like 1-2-3?"

According to Yates, the Unix proponents will not be able to look to IBM for guidance. While IBM will support individual contracts that require Unix-based systems, the company has not developed "an overall strategic direction on Unix," she said. "IBM will not be the company that actively waves the Unix banner or signs up a number of software developers."

AT&T, already a dominant force in the Unix market, should be the firm that shoulders that task, she added.

### AT&T should make development effort

"I am tired of AT&T waffling around," Yates said. "It can afford [the development costs] and should be putting together a cohesive, coherent effort in software development. Other hardware companies cannot afford the multimillion-dollar investment required to provide this software."

According to Yates, the Unix software market will undergo a significant shift during the next five years. In 1984, software development tools accounted for 54% of Unix-based software package sales; by 1989, however, that number will drop to 31%, she said.

In 1984, word processing and accounting packages made up only a fraction of Unix-based applications sold — word processing took a 2% share and accounting took a 1% share, Yates noted. The remaining 43% included all other packages, including a "fair amount" of vertical-industry software, she said.

Within five years, however, integrated office automation packages will outdistance all other applications, claiming a 32% share of the Unix-based software market, Yates predicted.

---

# Uccel enhances UCC-8 software

DALLAS — Uccel Corp. announced Release 2.1 of its UCC-8 Data Center Management software for CICS applications in IBM MVS or MVS/XA environments.

Release 2.1 includes an interface to Uccel's UCC-4 hardware accounting system. Through a common inventory file, UCC-8 users reportedly can track equipment problems, outages and configuration changes. The UCC-4 interface adds the ability to track new equipment orders and manage financial aspects of the inventory, a spokesman said. The product also includes modifications to the UCC Problem Management and Change Management functions.

UCC-8 Version 2.1 is licensed for $28,500.

Uccel is located at Uccel Tower, Exchange Park, Dallas, Texas 75235.

As Data Center Executive, are you signing a blank check?

If you can't verify your invoices for hardware and software quickly and easily, you may be spending more than you think—and more than you should.

The NETMAN® online data center and data communications management system stores detailed information so that you know the status of your hardware and software at all times, when payments are due and the exact amounts. A NETMAN report, on screen or in print, follows the standard industry invoice design so that details can easily be traced.

NETMAN keeps a full financial history so that tax credits, accruals toward purchase, cost allocations, depreciation, budget figures and projections are at your fingertips. And that's not all.

A single database stores every relevant fact about your hardware, software, network links and any other items you may want to include. One user even entered air conditioners, fire alarms, generators and back-up equipment... "Everything we pay for," he said.

The system knows all the network relationships, component reliability and financial status. It can even tell you if something is ordered but not received or received but not installed.

NETMAN also tracks problems and the methods and times of their resolution for some very revealing answers. It keeps a permanent problem history on every item and pinpoints trouble spots, patterns of problems, vendor response and even operator weakness so that the whole data processing and data communications environment can be fine-tuned for maximum uptime.

And NETMAN manages change by predicting the impact on related hardware and software. It avoids the complications and problems that arise so often when a configuration or system is altered.

NETMAN is the only Data Center/Data Communications Management System that tracks financial history plus configuration, problems and change. A significant number of the nation's largest corporate data centers use it. You should, too.

NETMAN®

[illegible]
[illegible]
[illegible]

# Mark IV program tester out

WOODLAND HILLS — Informatics General Corp. has announced Mark-ISPF, an option that allows programs developed under the company's Mark IV development system to be tested and maintained in IBM's Interactive Systems Productivity Facility (ISPF) under TSO and CMS.

Mark-ISPF provides syntax checking capabilities for specifying Mark IV applications in an on-line, interactive environment, the vendor said. The product is designed to take advantage of recent enhancements to Release 2.0 of ISPF, including variable panel formats, panel windows, 3279 default color displays and all screen sizes, including 3290 terminals.

Programmers can prepare and test the Mark IV applications using full screen editing functions, panels, keys and commands that are familiar to ISPF users. According to the vendor, full Help facilities and a tutorial are included.

According to the vendor, Mark IV users with ISPF can code on-line with syntax verification, decode and test programs. The product also permits users to review test output and source listing at their terminals in one session.

Mark-ISPF, scheduled for September availability, is priced at $15,000.

Informatics General is located at 21031 Ventura Blvd., Woodland Hills, Calif. 91364.

# Foothill Research announces Style language enhancement

BELMONT, Calif. — Foothill Research, Inc. has announced Version 2.2 of Style, its programming language for 32-bit minicomputers and mainframes running AT&T's Unix System V, University of California at Berkeley 4.2 and Version 7 operating systems.

Style also runs with Digital Equipment Corp.'s VMS operating system and Data General Corp.'s MV series with the AOS/VS operating system, according to the vendor.

Style 2.2 reportedly includes windowing and user-programmable function keys, a transaction logging and recovery system that allows users to keep track of changed records and new programming constructs.

The product also includes logical view capabilities that enable MIS managers to structure the data base so end users will see only pertinent information, the vendor said. The logging and recovery feature allows users to make a copy of each record before or after the record is changed.

Style costs from $17,500 to $45,000, depending on configuration. The product will be available in the third quarter.

Foothill Research is located at Suite 300, 1301 Shoreway Road, Belmont, Calif. 94002.

## UPGRADE from page 41

"Early positioning has the benefit of parceling the total conversion task into manageable chunks at the relatively small expense of paying some license fees earlier than might be strictly necessary," the study stated.

Respondents to the Xephon study spent, on average, a little more than five months evaluating whether to make the move to IBM's XA.

Xephon found that those users who decided to migrate early after the introduction of XA spent no more time making the decision than those who converted later. That, the company said, indicates "industry experience has done little to facilitate the decision-making process."

### Compelling reason to upgrade

Twenty-three of the 29 users cited virtual storage constraint relief as the most compelling reason for making the upgrade to MVS/XA. "Since it is impossible to buy virtual storage," the study stated, "it is the major factor [forcing] migration. After tuning virtual storage, the only option is to migrate to XA."

But, Xephon warned, XA migration does not necessarily solve the problem of virtual storage constraint — it usually provides only temporary relief. Almost half of those users who had converted to MVS/XA said virtual storage constraint was still a problem following the move.

"Note that many users still suffer from [virtual storage constraint]," the study said. "Potential XA migrants should not assume that migration will solve all their virtual storage problems. Virtual storage will still need to be monitored and managed to avoid nasty surprises."

### Ninety percent gave good rating

Despite that sour note, more than 90% of the migrants said MVS/XA was either very good or excellent when asked to rate the operating system.

The major stumbling block to migration for most users appears to have been incompatible software — either in-house or independent vendor packages that would not operate with MVS/XA. Nearly half of the respondents said they encountered a software supplier that did not have an MVS/XA-compatible version of the product in use.

The study, titled "XA in Practice," is available for $75 from Xephon's U.S. distributor PBS, P.O. Box 643, Cambridge, Mass. 02139.

How to justify your VAXcluster.*

*New Quantum RS is the answer.* *It is the only resource management system that allows you to report on VAX* or VAXcluster resource usage from one central data base.*

*When you require resource accounting, performance analysis, capacity planning, budgeting, cost tracking or chargeback, Quantum RS gives you the information you need to plan, control and react to system requirements.*

*Take the guesswork out of system management and justify your VAXcluster with Quantum RS.*

*For a free informative booklet on Quantum RS, please call or return the coupon.*

CIS COMPUTER INFORMATION SYSTEMS

165 Bay State Drive
Braintree, MA 02184
Tel. (617) 848-7515

YES! I want to know about how Quantum RS can help justify my VAX.

☐ Please send the booklet and have a representative call me.

☐ Please send the booklet and keep me informed of additional offerings.

Name
Title
Company
Street
City State Zip
Telephone ( )

Send to: Computer Information Systems, 165 Bay State Drive, Braintree, MA 02184, Telephone (617) 848-7515.
Outside Massachusetts, call toll free 1-800-[illegible]

*VAX and VAXcluster are trademarks of Digital Equipment Corporation.

## SINGLE

from page 41

with limited growth potential, limited product offerings and poor service and support facilities, clients may find themselves rather quickly in the unhappy position of having to rebuild and redefine their information processing needs.

Today, companies must recognize that they are not simply choosing a single product. They are setting a direction and selecting components that comprise a strategy from a single software vendor.

Various criteria must be considered before a new software product and vendor are brought into the corporate fold. Service has become a crucial factor — it is as important as the quality of the software product itself. Vendors know that in the early growth stages of any market, clients concentrate more on the technology of the product features.

Support, at this initial stage, means parts and-services, or in the software industry, product installation and warranty. As a market matures and as client needs become more complex, product support expectations become more sophisticated.

### User product support

Experienced users require the support necessary to maximize their effective and efficient use of the product. When a vendor cannot, or does not, respond to these more sophisticated needs, research has shown that it is usually because the vendor lacks the inclination, expertise or resources. In cases such as those, support has been given an unacceptably low priority by the vendor, which is short-sighted for both it and the client.

Service commitment and support capabilities must become a competitive marketing weapon among software vendors. Vendors will have to find faster and better ways of responding to clients' problems and needs. More important, they will have to develop innovative ways of marketing and distributing support services. New technology, for example the micro-to-mainframe link, can be used in creative and unique ways to benefit the DP department.

In an examination of recent request for proposals (RFP) submitted by Fortune 1,000 companies on a variety of software products, service and support were key issues. Typical RFP questions included: How many employees support the product — in sales/marketing, in technical support, in development/maintenance? How many service locations are there? Is there a hot line? Who staffs it? How often? Is there a central method for reporting and resolving problems? What is it?

### Vendor criteria

One Fortune 500 company listed the following among its criteria for choosing a vendor: "The vendor must exhibit strong financial growth and expanding markets that would assure its capability to carry out maintenance commitments into the future. The system should have a strong user base of satisfied clientele attesting to the system's flexibility, conversion and the vendor's response to problems."

RFPs are certainly not a new method of evaluating user concerns. But there are more demands for service, support, training, financial stability and multiple product offerings than ever before. These client demands reflect the increasing growth and importance of the software industry.

These demands can be expected to become the key competitive issues and measures of software vendor performance during the next five years. Innovative technology will be assessed not merely in terms of its potential to improve a corporation's bottom line but upon the vendor's ability to service and support that technology as well.

The software firms that survive into the 1990s, will be those that can best answer the business and service/support needs of their clients and form long-term and expanding business partnerships with them.

---

## DDI announces enhanced data modeling tool

ANN ARBOR, Mich. — Database Design, Inc. (DDI) unveiled an enhanced version of its logical data modeling tool for IBM mainframes running MVS/TSO.

Data Designer II now includes an interactive, menu-driven user interface as well as a full screen facility for entering and editing descriptions of applications data requirements, a spokesman said. Also included are functions for incorporating "entity-relationship modeling" terminology and an interface with the company's Information Planner software for strategic planning of information systems.

Data Designer II accepts descriptions of the data requirements of applications accessing the data base and will integrate the user views into a logical data model supporting those applications. Reporting and plotting options translate the model into design specifications customized to relational, hierarchical or Codasyl data base environments, according to the vendor.

The interface to DDI's Information Planner assures consistency between top-down and bottom-up approaches to data base design.

Data Designer II is priced at $44,000.

DDI is located at 2020 Hogback Road, Ann Arbor, Mich. 48104.

---

KODAK INTRODUCES THE COM
AUTOMATIC
START TO

It's the COM you asked for: A completely integrated system, automated and in-line.

Now your mainframe output can be printed by laser on film, processed, duplicated, and intelligently collated—yet nobody has to lift a finger.

No clock watching. No shuffling fiche into a duplicator. And no chemicals, because processing is by heat only.

You're looking at a real system, not parts stuck together. A design that started with a blank sheet of paper and then took shape over the years as we listened to what you needed—and translated those needs into fresh ideas that are years ahead.

For instance, there's a systems manager. A powerful new business computer that actually runs the operation, and also provides instant system access when requested. One benefit is that less experience and training are required for operators.

There's also an exclusive buffer for fiche masters, automatic exposure adjustments triggered by bar codes, and a programmable

© Eastman Kodak Company, 1985

## PROGRAM

from page 41

and an incorrect version that violated one or two rules of programming discourse. His hypothesis was that given the incorrect version to debug, the performance of an expert programmer would be reduced to that of a novice.

"The rules of discourse are absolutely critical to writing good code," Soloway said. The more a program is patched and enhanced, the less its structure tends to follow the rules of discourse. "You can see why maintenance is hard," he said.

To better understand how programmers maintain programs, Soloway conducted an experiment in which senior programmers working in industry and novice programmers were each given two hours to make two enhancements to a program. The programmers were interviewed and videotaped during the experiment. Quoting baseball veteran Yogi Berra, Soloway said, "You can observe a lot by just watching."

### Time usage revealing

A total of 55% of the expert programmers finished the task, compared with 25% of novice programmers. Most revealing was the way the expert and novice programmers used their time.

In a chronological review of the two-hour period, the experts spent 10% of their time reading documentation, 5% reading the assignment, 30% analyzing the program and 55% in writing code. The novices spent 10% of their time reading documentation, 5% reading the assignment, 10% analyzing the problem and 75% in writing code.

"Experts were more model directed. When they [looked] at documentation and code, it was more to verify their expectations. The novices were more code oriented," Soloway said. "All expert programmers were assessing the quality of the person who wrote the program," when they were analyzing the code, he said. The experts look at the global lay of the land in the code to judge whether the programmer could be trusted, or whether the program was written the way he would have. If the experts conclude that they cannot trust the programmer, "They get nervous and make a lot of judgments."

Once the experts completed their analyses, they immediately generated a plan for making the enhancements. "The novices didn't do this," Soloway said. Instead, the novices jumped into coding. "The experts made more observations, used documentation more than [the] novices [did] and tried to get an overview initially," Soloway noted. One expert programmer said while reviewing the code, "I need the big picture."

Having less-experienced programmers debugging and enhancing programs may be counterproductive, the findings suggest. "A lot of maintenance is being done by people who don't have the models" in their heads, Soloway said.

Having experienced programmers is by no means the only factor in a good maintenance program. The expert programmer in Soloway's experiment did complete the enhancement, but "it was a terrible patch. The next guy that comes along to fix this program is going to blow his mind," Soloway said.

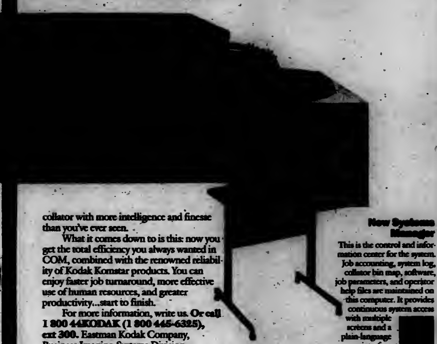
However, it was not the expert's fault that his patch violated a rule of discourse. The program documentation failed to make explicit what principles the company management wanted applied to its software. "The documentation did not support the goal plan analysis. It didn't tell the expert the information he needed. The expert programmer got lost," Soloway said.

DP managers should ensure that their company's maintenance goals and plans are explicit in documentation and that the documentation specifies which structures, routines and hierarchies are desired, Soloway advised.

Criticisms of Soloway's experiments at Yale were that the test programs are too small, that the fast pace of technology makes careful study impractical and that the experiments are too expensive to perform.

But Soloway answered that keeping programs small allows him close control of his experiments until he is confident of his methods. "You've got to start somewhere," he said. Technology may be moving fast, but in the absence of data on whether a technology is beneficial, bad buying decisions can be made, he maintained.

THAT DOES IT ALL:
THROUGHPUT,
FINISH



collator with more intelligence and finesse than you've ever seen.

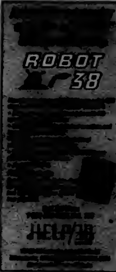
What it comes down to is this: now you get the total efficiency you always wanted in COM, combined with the renowned reliability of Kodak Komstar products. You can enjoy faster job turnaround, more effective use of human resources, and greater productivity...start to finish.

For more information, write us. Or call 1 800 44KODAK (1 800 445-6325), ext 300. Eastman Kodak Company, Business Imaging Systems Division, Dept. DP5563, Rochester, NY 14650.

New Systems Manager

This is the control and information center for the system. Job accounting, system log, collator bin map, software, job parameters, and operator help files are maintained on this computer. It provides continuous system access with multiple screens and a plain-language interface.

new
KODAK KOMSTAR imaging system
the start-to-finish COM



# Who's out to get your computer?

**Almost anyone.**

Nowadays, your data is vulnerable. From disgruntled or careless employees, to industrial spies and hackers, the potential for damage or theft is everywhere.

It's impossible to be overprotective. Which is why you need Codercard™

**A totally different security system.**

Codercard adds a virtually impenetrable level of protection to your existing computer security systems.

And it goes one step further. It actually lets you monitor all of your other levels of protection. If someone attempts to breach your system, Codercard becomes an eyewitness. It can automatically tell you both when and where the attempt was made.

**Double protection against break-ins.**

Unlike conventional security devices, Codercard is not just a hardware solution. Or a software solution. It's both, interlocked together.

At the heart of the system are tamper-proof "access cards" which are issued to authorized users.

Each card is only slightly thicker than a credit card, and contains a self-powered microprocessor with a unique ID number. A new complex series of algorithms with over 400 billion numerical combinations are used for authentication and authorization processing.

**You select who gets in.**

With Codercard, you can tailor security to any organization. Or even to any user group. You decide who sees what information. When and where they see it. How much they see. And even how many times they see it.

For all the details, just give us a call. Ask for a demonstration. Because if you haven't seen Codercard in action, you haven't really considered every way to protect your total data environment.

Codercard. It's the right way to keep the wrong people out.

**CODERCARD.**
2902 Redhill, Suite 160, Costa Mesa, CA 92626
Telephone: (714) 662-7689

© Codercard 1984.

# MICROCOMPUTERS

## MIS panel: Windows not the answer

By Kathleen Sullivan
CW West Coast Bureau

PALO ALTO, Calif. — After more than seven hours of presentations on visual user interfaces, including talks by the leading firms, the corporate MIS panel was asked to respond to the question: Are operating environments the solution you need?

Much to the surprise and chagrin of the audience, a trio of speakers, representing Peat, Marwick, Mitchell & Co., Wells Fargo Bank and Syntex Corp., delivered a polite but firm rejoinder: No.

"It doesn't seem to us, as users of the existing technology, that what is on the horizon will answer our needs, said Duane Bell, a partner in Peat Marwick's San Jose, Calif. office. "We have other, more basic concerns to wrestle with."

"If you put a price on it [windowing techniques], I'm not sure I'd buy it," said Thomas Thibault, vice-president of business and systems planning in Wells Fargo's Walnut Creek, Calif. office.

"We don't feel a burning need for these products," said Helen Peters, director of office information services for Syntex, a pharmaceuticals firm based here. "No one has been beating down my door for [IBM's] Topview, [Microsoft Corp.'s] Windows or [Digital Research, Inc.'s] Gem," she said.

But the audience, brought together earlier this month by Infocorp, a Cupertino, Calif.-based market research firm, pressed on.

Perhaps the panel was not familiar with the new visual environments, someone in the audience suggested. After all, Topview has been available only a short time, Gem began shipping the previous week, and the oft-delayed Windows has not yet appeared on the market.

So the panel members were asked to comment on Apple Computer, Inc.'s Macintosh, the computer that introduced icons, windows, pull-down menus and mouse pointing devices to the general public last year.

"At Syntex, we have users that I would characterize as true believers [in] the Macintosh," Peters said. "For that reason, we have been dragged kicking and screaming down the Macintosh road. But we must

See PANEL page 54

- Microsoft introduces Microsoft Access, an asynchronous communications package with custom menus and the ability to connect to multiple sources/59
- Lifetree Software enhances its Volkswriter Deluxe word processing package for greater speed and Topview compatibility/51
- Samna upgrades its Samna Word II and Samna+ packages, adding Document Content Architecture support/54

INSIDE
Software/54
Printers/Plotters/58
Board-Level Devices/59

## Fire sale seen for last PCjrs

By Edward Warner
CW Staff

ATLANTA — IBM has 200,000 PCjrs sitting in its warehouses, and it will dump them on the market this year for about $500 each, including a color monitor.

That was one of several predictions made regarding IBM and the microcomputer industry by analyst Amy Wohl, president of Amy Wohl & Associates in Bala Cynwyd, Pa.

Speaking recently at the Comdex/Spring '85 trade show here, Wohl said she based her estimate on information gained from a key supplier of parts used in the PCjr. IBM could sell the machines to schools at a big discount and come off "looking like a good guy," she said, but she doubted that Big Blue would choose that route.

Wohl's most controversial prediction was that the Personal Computer AT "may not have a full life span" due to what she said were problems with its hard disk storage unit and the software that controls that unit. This, she said, could spell big trouble for the 26 Personal Computer AT

See WOHL page 55

SMALL TALK
Kathleen Sullivan
CW West Coast Bureau

## Does Mac XL spell stopgap strategy?

**Stopgap** *n*: a person or thing serving as a temporary substitute for another; makeshift.

At its lavish annual meeting in January, Apple Computer, Inc. borrowed a song from the Pointer Sisters to convey its corporate exuberance and warm up the audience. An Apple video was presented on a giant screen to the beat of "We're so excited, . . . and we just can't hide it." Apple Chairman Steven Jobs played impresario for the main act, the Macintosh Office. Jobs introduced the Appletalk network, the Laserwriter printer and the Macintosh XL, which were billed as members of the product line that would give Apple a foothold in the

See APPLE page 56

## Multimate WP products debut

### Writing/editing unit, file manager in lineup

ATLANTA — In addition to a network version of its Multimate 3.3 word processor software [CW, May 13], Multimate International Corp. introduced a file manager and several word processing programs for the IBM Personal Computer earlier this month at Comdex/Spring '85 here.

Multimate's $195 file manager, Multimate On File, reportedly allows users to search, sort and transfer mailing lists, records and office files produced with the Multimate word processor. The file manager organizes information into file boxes, with the number of boxes limited only by disk space. Multimate's merge utility is used to create customized letters and reports.

The $495 Multimate Advantage Professional Word Processor is said to be oriented toward professionals and to incorporate footnoting, table of contents generation and automatic section number-

See WP page 55

Advertisement Advertisement Advertisement

Oracle announces portable version of IBM SQL/DS and DB2

Any application written for IBM's SQL/DS or DB2 relational database management systems will now run without modification on DEC, DG, AT&T, HP and several other manufacturers' minis, and a wide range of micros, including the IBM PC/XT and PC/AT.

Oracle Corporation introduced the first relational DBMS in 1979. Today ORACLE is the only relational database management system that is completely compatible with IBM's SQL/DS and DB2. Programs written for SQL/DS or DB2 will run unmodified on ORACLE.

Originally designed for IBM mainframes and DEC superminis, ORACLE is now available on a wide range of machines, from mainframes to PCs. And ORACLE includes an integrated set of 4th generation software tools not available with either SQL/DS or DB2.

● Why not Cullinet, ADR or Focus? There is a clearly defined standard for relational database systems. It's called SQL, and it's from IBM. Both ANSI and the US Government are in the process of adopting SQL as *the* standard database language. The Cullinet, ADR and FOCUS software packages each implement their own unique database language - each one painting the user into its own corner. Since its inception, Oracle Corporation has provided total IBM SQL compatibility.

Few shops nowadays run only IBM mainframes. Why, then, even consider a database solution that runs *only* on *IBM mainframes?* Applications written with ORACLE run identically on mainframes, minis, and PCs. Because all versions of ORACLE *are* identical.

FOCUS, Cullinet and ADR offer either a limited subset, a completely different product or nothing at all (respectively) for the PC. And none have minicomputer products.

● Why not just go with DB2 or SQL/DS? A relational DBMS simplifies but does not by itself eliminate application programming. Additional tools are necessary if users are to create and maintain their own applications.

DB2 and SQL/DS are relational systems, period. ORACLE is a relational DBMS plus integrated 4th generation software tools for application generation, report writing, color graphics and network communications.

Furthermore, SQL/DS and DB2 run only on IBM mainframes (and are somewhat unlikely ever to run on another vendor's system). ORACLE runs on more IBM hardware and operating systems than do IBM's relational products.

● What about Goldengate, dBase III, Symphony or Framework? PCs need more than PC software if they are to be usefully integrated with corporate data processing. Incompatibility with SQL, while serious, is not the only major problem with these micro packages. None provides an acceptable level of data security, integrity or recovery facilities. And their PC-to-mainframe links are functionally primitive and difficult to use.

To effectively link computers, all machines in the network should run the same software. Only ORACLE provides standard software on mainframes, minis and micros. Data and programs can then be shared among users of different machines, distributing the workload.

ORACLE is currently installed on over 1000 mainframe and supermini systems around the world, as well as on thousands of PCs. Oracle's customers include 8 out of the 10 largest U.S. corporations, as well as major foreign companies and government agencies.

For further information, contact Oracle Corp., Dept. C2, 2710 Sand Hill Rd., Menlo Park, CA 94025, or call 415/854-7350 ext. 1060.

Introducing R:base
Because your people
be using applications than

# 5000.
# would rather
# waiting for them.

If you're like most M.I.S. directors, you're under pressure to be more productive than ever before.

And now, there's a new DBMS product that can take this heat off your department.

It's the all-new R:base™ 5000.

It doesn't matter if it's being used by your top programmer, a rookie sales manager, or anybody else in the company. With new R:base 5000, your people can develop custom, heavyweight applications—and save hours, even days of development time.

The secret of new R:base 5000? A unique, menu-driven Application Express™ feature that actually generates programming code. While guiding your users through the entire development process. So, instead of entering thousands of keystrokes, or writing lines of code, they just answer a series of simple questions. Then, the Application Express does the rest. To speed things up even more, it includes instant forms and reports, too.

New R:base 5000 also features a fast new way for your staff to set up their databases: visually. They simply fill in the blanks in an on-screen table. And if they want to build menus into an application, they just tell the Application Express what to do, and it writes the code automatically.

For the novice users in your company, our new Application Express is a way to write complex applications right off the bat. And new R:base 5000 gives veteran programmers the heavyweight procedural language they need to build sophisticated applications and systems—with or without the Application Express. Either way, they'll always save time and increase their productivity. Because R:base 5000 also gives them fast and easy rules verification and data entry, along with a comprehensive report writer. There's even a compiler, to protect their application code.

New R:base 5000. It's the best way to give the whole company a big boost, and give yourself a break at the same time. Want to find out how? For only $9.95 (plus shipping), we'll send you an interactive tutorial that actually lets you build sample applications. Just call 1-800-547-4000, Dept. 976. In Oregon, or outside the U.S., call 1-503-684-3000, Dept. 976. Or visit your nearest computer store or software dealer. (If you own R:base 4000, see your dealer about our trade-up kit.)

And see what it's like to have everything running your way.

**PRODUCTIVITY:**
**R:base 5000 vs. dBASE III**

**CLIENT DATABASE MENU**

*Using R:base 5000 and dBASE III™, we built this menu and linked it to its subroutines. The resulting applications were equivalent. The effort required wasn't.*

| | R:base 5000 | dBASE III |
|---|---|---|
| Automated steps | 37 | 0 |
| Command lines | 47 | 244 |
| Keystrokes | 434 | 6568 |
| Time* | 9 minutes | 2 hours |

*Actual time may vary depending upon skill level.

R:BASE 5000
FROM MICRORIM®

**Your way. That's R way.™**

# IBM micros get Access software

## Microsoft tool allows tapping of data services

BELLEVUE, Wash. — Microsoft Corp. last week introduced Microsoft Access, a $250 communications software package for the IBM Personal Computer line and compatible systems.

The software is designed to allow users to easily access a wide range of information services, including on-line data bases, information retrieval services and electronic mail, the company said.

Microsoft Access reportedly provides a menu system for information and electronic mail services, a command language, the ability to connect to multiple sources, conversion utilities for popular applications programs and support for communications with other personal computers and mainframes.

### Built-in interfaces

The package provides built-in interfaces for Dow Jones & Co. News/Retrieval, Compuserve Corp.'s Executive Information Service, Newsnet, Inc.'s Newsnet and the Official Airline Guide information services, according to the company. Custom menus can translate a command into the sequence that a particular service requires.

Access also can batch several steps together to shorten connect time, Microsoft said.

The software reportedly stores requests in memory and automatically offers the same selection process the next time.

The package offers a menu for MCI Communications Corp.'s MCI Mail and Western Union, Inc.'s Easylink electronic mail services. It also is said to provide a text editor and in-box and out-box facilities.

In addition, Access features a Basic-like command language, Microsoft's Access Script Commands, that permits users to write their own scripts or custom menus.

Access can transfer data files to Lotus Development Corp.'s 1-2-3, Microsoft's Multiplan and Chart and programs with Data Interchange Format files.

The package can emulate Digital Equipment Corp. VT100 and VT52 terminals, Microsoft said. It supports both the Xmodem and Tymnet, Inc.'s X.PC transfer protocols. With or without X.PC, Access provides a built-in windowing capability, according to the vendor.

The screen can be split into as many as eight windows, each with a different communications line or X.PC assignment.

Access is scheduled for Aug. 1 delivery. It requires 256K bytes of internal memory, PC-DOS or MS-DOS 2.0 or higher, two disk drives and an asynchronous communications card, Microsoft said.

More information is available from Microsoft at 10700 Northup Way, Box 97200, Bellevue, Wash. 98009.

---

# All Computers' multifunction AT1 card out

TORONTO — All Computers, Inc. has released a multifunction board that reportedly offers multitasking and multiuser capabilities for the IBM Personal Computer, Personal Computer XT and compatibles that have up to 4M bytes of memory expansion capacity.

A subset of the board reportedly allows bank switching and permits the use of packages such as Lotus Development Corp.'s upgraded versions of 1-2-3 and Symphony.

The All Card AT1 contains proprietary Cmos custom chips that perform memory management unit (MMU) functions that are needed to run AT&T's Unix operating system, the vendor said. The MMU functions are said to perform I/O operations and internal memory transfers simultaneously and to protect against one job interfering with others when multitasking or multiuser operations are being performed.

The All Card, in its basic configuration, costs $395 and includes 128K bytes of memory expandable to 4M bytes, the vendor said. With the MMU, the 128K-byte version costs $695.

Another configuration priced at $495 includes 128K bytes of memory, a serial port and a clock, the vendor said. A similar configuration with 256K bytes of memory costs $595.

The cards can be configured with a mix of 64K-byte and 256K-byte random-access memory (RAM) chips, the vendor said. The MMU costs $300 more.

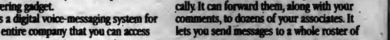
All versions include software for a RAM disk, clock and spooling functions, the vendor said.

The board's calendar clock is said to be identical to the one included in the Personal Computer AT, with battery-backed Cmos RAM and alarm interrupts. The serial port included in the All Card can be addressed with two addresses other than Com 1 and 2 for use in a multiterminal configuration.

More information can be obtained from All Computers, Suite 501, 110 Bloor St. W., Toronto, Canada M5S 2W7.

---

NOW IT ONLY TAKES ONE TO TANGO.



Say hello to PhoneMail™ and say hello to the One Party Phone Call. No more waiting for the phone to ring, waiting for someone on the other end, waiting for your telephone partner in another city, another meeting, another time zone. Waiting.

PhoneMail is not your basic phone answering gadget.

It's a digital voice-messaging system for your entire company that you can access from any Touch Tone* telephone anywhere in the world, any time.

PhoneMail can answer your phone with your personal greeting. (If you'd prefer, your secretary can take the call and direct the caller to PhoneMail.)

It will let you answer messages automatically. It can forward them, along with your comments, to dozens of your associates. It lets you send messages to a whole roster of

*Trademark of AT&T

4900 Old Ironsides Drive, M/S 626 Santa Clara, CA 95054.

# IBM EZ-Prep, EZ-Run software debut

## Allow micro execution of CSP applications

RYE BROOK, N.Y. — IBM has announced two software packages that reportedly allow the translation and execution of IBM Cross System Product (CSP) large-systems applications on the IBM Personal Computer, Personal Computer XT, AT and 3270 Personal Computer.

EZ-Prep is said to translate CSP programs developed on a host mainframe, while EZ-Run reportedly executes the programs on the micro. CSP, a family of applications development products, currently operates on IBM 4300 and 3080 series mainframes and 8100 distributed systems, according to the vendor.

EZ-Prep and EZ-Run reportedly support sequential, relative record and indexed files on the micro and feature prompted inputs, Help screens and field-level validation on entry.

**Packages allow file transfer**

The products are said to allow transfer of message files and applications data files to and from the host and support applications development on the micro.

Files are transferred to the micro using any file transfer utility appropriate for the user's system configuration. Mainframe applications must come from one of the following environments: CICS/VS, SSX/VSE, VM/SP, VSE/AF2 or MVS/TSO.

Both EZ-Prep and EZ-Run require PC-DOS 2.0 or higher or the 3270 Personal Computer Control Program, Version 1.2 running on the 3270. Each requires two dual-sided floppy disk drives or one dual-sided drive with a 10M-byte hard disk and the IBM monochrome display and printer adapter or color display with color/graphics adapter. Perpetual licenses cost $1,200 for EZ-Prep and $125 for EZ-Run.

IBM's Information Systems Group is located at 900 King St., Rye Brook, N.Y. 10573.

# Net version of Higgins introduced

SAN LEANDRO, Calif. — Conetic Systems, Inc. has introduced a network version of its Higgins administrative software for IBM Personal Computers running on 3Com Corp.'s Etherseries local-area networks.

Higgins is designed to take care of organizational items such as time and event management, personal filing, telephone dialing, to-do lists, calculations and note-taking.

The network version has been integrated with 3Com's Ethermail and Etherprint functions, according to the company, and Higgins can run in background while the user is working with other programs on the network. The package uses Etherseries login and password protection schemes to control access to files.

Higgins works with a single copy of the software resident on the server and does not require any key disk on workstations, Conetic Systems said. The software will work on diskless personal computers.

Higgins for the 3Com Etherseries PC Server is priced at $695, while a version for the 3Server costs $1,295.

More information is available from Conetic Systems at 1470 Doolittle Drive, San Leandro, Calif. 94572.

# Volkswriter Deluxe 2.2 out from Lifetree

MONTEREY, Calif. — Lifetree Software, Inc. has enhanced its Volkswriter Deluxe word processing software for the IBM Personal Computer line.

Recompiled with a Pascal compiler, Volkswriter Deluxe 2.2 does not make disk overlays, boosting speed considerably, according to the company.

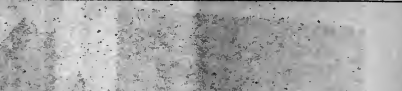
Support is now offered for IBM's Topview operating environment, allowing up to three copies of Volkswriter Deluxe 2.2 to run at one time on a 640K-byte system.

In addition, the release is said to incorporate a file filter that strips files of control characters and transmits only Ascii characters, aiding use in dial-up transmissions and on local-area networks.

With use of an IBM Enhanced Graphics Adapter card, the word processor now can display 43 lines of text, according to Lifetree. It also supports the IBM Personal Computer AT's high-speed keyboard option, permitting the keyboard to repeat up to 30 characters per second, three times the normal speed.

Volkswriter Deluxe 2.2 is priced at $295. Registered users of Volkswriter 2.0 or 2.1 may upgrade for $30, including the new manual. Volkswriter 1.2 and International Edition users may upgrade for $100.

Lifetree Software is located at 411 Pacific St., Monterey, Calif. 93940.



folks. So you can forget about publishing reams of short memos. Its voice prompts guide you step by step. So there's no chance for miscommunication. Problems are solved. Decisions are moved along.

It works wonders with most any business telephone system. It'll cater to forty folks or a thousand—simply, swiftly, cost-effectively.

Of course, only ROLM has PhoneMail. That's not surprising. We're the folks who taught telephones and computers and people how to work together. We can show you the most advanced ways to manage voice and data today, next year and into the next century.

If your business phone system has you talking to yourself, it's time to talk to ROLM.

ROLM
an IBM company

[illegible] (In Alaska, California and Hawaii, call [illegible].)

# Samna upgrades WP tools

ATLANTA — Samna Corp. has announced Release 3.0 of its Samna Word II and Samna+ word processing software for the IBM Personal Computer line.

Enhancements to both packages are said to include faster operating speed and support for IBM's Document Content Architecture, permitting Samna users to transfer documents to IBM's Distributed Office Support System.

Other enhancements include selectable output, which permits users to print to either a serial or parallel port or a file, and an enhanced directory, which identifies the space remaining on the disk.

In addition, the releases are said to offer support for both IBM's PC-DOS and Microsoft Corp.'s MS-DOS 3.0 and to feature "hot key" support, which allows users to cease work temporarily on a Samna document and access another program resident in memory.

Additional features of the enhanced versions include the ability to specify a starting number for footnotes, present the default page within a single screen and Samna/Ascii translation.

Samna Word II is priced at $550. Samna+ costs $695, according to the vendor.

Samna is located in Suite C-700, 2700 Northeast Expwy., Atlanta, Ga. 30345.

## SOFTWARE

■ Programming Concepts, Inc. has announced Clist, software that provides printed output of source code for programs written in C.

Clist enables a programmer to set program pagination, titling options, variable tabs and special printer controls, the vendor said. The product reportedly makes debugging a C program easier by allowing a programmer to merge address information and a program listing. Clist generates a variable name, cross-reference list for each source code module.

Clist runs on an IBM Personal Computer with IBM's PC-DOS 1.1 or 2.0 operating system.

The program costs $129.

*Programming Concepts, 40 Orville Drive, Bohemia, N.Y. 11716.*

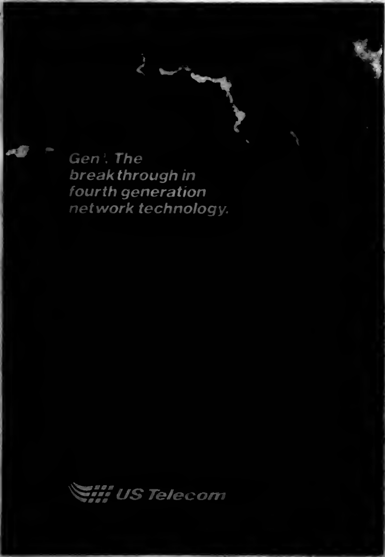
■ Infosystems Technology, Inc. has announced that its relational data base package, Rubix, is now available for the AT&T 3B2 supermicrocomputer and Altos Computer Systems, Inc.'s 586 and 986 microcomputers running AT&T's Unix operating system.

Rubix features reportedly include multiple perspectives on the data base for different classes of users and queries that search across multiple data bases without specification as to where the data resides.

Rubix includes an English-like command language, a compilable relational programming language and a C language interface.

Rubix for the AT&T 3B2, the Altos 586 or the Altos 986 is priced at $1,495.

*Infosystems Technology, 6301 Ivy Lane, Greenbelt, Md. 20770.*



■ Datamedia Corp. has announced that the Unix System V, operating system for its line of supermicrocomputers now includes multiuser windowing capabilities. The company also announced that Access Technology, Inc.'s 20/20 spreadsheet package now runs on its Unix-based 932 supermicros.

The windowing capability is said to be transparent to applications. Users can work with up to eight active windows, including a command window with full terminal emulation and viewing control for each window. Applications, commands and utilities can be viewed simultaneously.

English language commands are displayed in a command window, according to a spokesman.

Other features include horizontal and vertical scrolling, paging and dynamic sizing and positioning. A window library stores up to 48 user-defined windows that can be recalled at any time by the user, the spokesman said.

The list price of a Datamedia con-

Continued on page 56

## PANEL

from page 47

provide integration and migration strategies for the company, and we don't know how to do that with the Macintosh."

Peat Marwick, by contrast, is one of the most visible corporate users of the Macintosh. The company has bought approximately 4,000 Macintoshes, which its auditors tote along to audit engagements, Bell noted. But the computer's visual interface was not the crucial factor. Bell said the firm chose the Macintosh because it "met a critical need for portability."

Although they lacked enthusiasm for visual user interfaces, the panelists had definite ideas on what they would like to see: a well-designed menu system, improved data base management systems, better presentation graphics and increased speed in microcomputer-to-mainframe links.

"We try to be state of the art, not leading edge," Syntex's Peters said. "We can't afford the conversion costs, training and capital outlay of the latest and greatest technology."

Noting the close relationship that Apple has cultivated with Peat Marwick, Bell offered the software vendors in the audience some free counsel. "If you have a target user, get involved with them in the planning stages," he said.

Continued from page 54

figuration including 16 windowing terminals, a Datamedia 932 supermicro and the Unix operating system with windowing is $40,170.

Access Technology's 20/20 package sells for $950 for eight users.

*Datamedia, 491 Amherst St., Nashua, N.H.*

■ The ICU Group has announced emulation software for Digital Research, Inc.'s CP/M 80 operating system that gives IBM Personal Computer, XT, AT and compatible computers under Microsoft Corp.'s MS-DOS 2.0 or later versions the ability to run CP/M 80 programs without an additional coprocessor board.

CP/EM is said to allow Microsoft's MS-DOS to redirect I/O devices for use in altering device assignments, which allows CP/EM access to all standard MS-DOS devices and any installed device driver.

Serial communications programs are included with CP/EM to aid in the transfer of programs and data between CP/M and the MS-DOS computer.

The program costs $79.95.

*The ICU Group, P.O. Box 10118, Rochester, N.Y. 14610.*

■ Access Technology, Inc. has announced its Pro 20/20 integrated spreadsheet program for Digital Equipment Corp. Professional series computers.

Pro 20/20 is said to allow users to paste spreadsheets or graphs into DEC's Prose Plus word processing package documents and to access DEC's Procomm communications program without exiting Pro 20/20.

The package is a smaller version of Access Technology's 20/20 program, which runs on DEC's VAX series machines, the vendor said.

The package costs $500.

*Access Technology, Six Pleasant St., S. Natick, Mass. 01760.*

■ Thorn EMI Computer Software, Inc. has unwrapped its Perfect Draw graphics design program, which allows users of the company's Perfect Writer word processing program to create and add illustrations and stylized text to their documents.

The package runs on IBM Personal Computer, Personal Computer XT and Personal Computer AT computers and Apple Computer, Inc.'s Apple IIe and IIc microcomputers.

Icons are used to operate the program, the vendor said. The program is said to be compatible with input devices including a mouse, joystick, graphics table and light pen.

The package costs $50.

*Thorn EMI Computer Software, 1881 Langley Ave., Irvine, Calif. 92714.*

■ Account Data Group, Inc. has announced that its Primavera Project Planner software has been updated to operate on the Zenith Data Systems Corp. line of microcomputers, as well as on the IBM Personal Computer and its compatibles.

The upgraded version reportedly will run on Zenith's Z-100, Z-110, Z-150 and Z-160 models that use Micro-

Continued on page 56

## WP from page 47

ing. Also included are line and box drawing, forms generation capability and file and list management.

Multimate Executive Word Processor, priced at $595, offers full compatibility with Multimate Advantage and provides, at hand, basic word processing features for such functions as writing memos of first-draft reports.

The $245 Just Write package is said to be an entry-level word processor that offers basic writing and editing functions in addition to footnoting. It runs on the PCjr as well as the rest of the Personal Computer line.

Multimate On File requires 128K bytes of memory. Multimate Advantage and Multimate Executive each need 320K bytes of memory. Just Write requires 128K bytes of memory. All except Just Write require IBM's PC-DOS 2.0 or higher. Just Write requires PC-DOS 2.1 on the PCjr and 2.0 on other Personal Computers.

Multimate is located at 52 Oakland Ave. N., East Hartford, Conn. 06108.

## WOHL from page 47

compatibles announced so far. "IBM may bring out a product that replaces it before [IBM-compatible makers] are able to take hold in the marketplace," she said.

Wohl also said that the much-rumored next generation of Personal Computers, sometimes called the PC2 line, will not debut until late this year at the earliest. An earlier introduction probably was planned, she said, but the shake-up that sent new management to IBM's Entry Systems Division has caused the delay.

As for whether IBM will introduce a laptop computer, Wohl said IBM is unlikely to do that until that market heats up enough to offer the prospect of a significant return on investment.

There are few laptop machines with a reasonable price, around $2,500, Wohl said. She added that the most exciting action on the portable market is in the 14-lb to 16-lb transportable market, products such as the Morrow, Inc. Pivot II and the Zenith Data Systems Corp. Z-171, both of which premiered at Comdex/Spring '85.

With such IBM-compatible, battery-operated machines on the market, she predicted, the days of the 28-lb IBM-compatible transportable are numbered.

We dropped the price
of our modems.

The cost of transmitting data just keeps getting lower and lower. Thanks to Datagram. And our line of inexpensive, yet immensely talented modems.

All are totally soft and down-line loadable, have built-in signal quality monitoring, and run on unconditioned voice grade lines. Yes, that's right. Even our 14400 with built-in channel buffered mux which sells for under $4,500. And you can get it with trellis encoding for just a little more.

Our 9600 point to point modem is a real work horse at only $1,495. But if you want a 9600 with a four channel buffered mux, we've got that too at only $1,895.

If your application requires multi point modems, our 9600 fast poll train in 7½ ms. That's the fastest in the world. And goes for $2,195.

On top of that, all our modems are preconfigured at the factory, so all you have to do to get them going is connect them to the line.

We have modems or other data communications equipment in your hands in just 72 hours. The phone call is free. So call now, 1-800-235-5030 and order your Datagram modems today.

Datagram

We make networks work harder.

USA: Datagram, 11 Main Street, East Greenwich, Rhode Island 02818
Canada/International: Datagram Inc., 1451 Graham Bell, Boucherville, Quebec, Canada J4B 6A1
Branch offices in major cities.

Continued from page 55

soft Corp.'s MS-DOS.

The menu-driven project management software reportedly features critical path scheduling, resources leveling, cost control and report generation and can schedule up to 10,000 applications activities.

The product requires 512K bytes of random-access memory and a hard disk and costs $2,500.

*Account Data Group, Suite 302, 2139 Wisconsin Ave. N.W., Washington, D.C. 20007.*

## PRINTERS/PLOTTERS/PERIPHERALS

■ **Fujitsu America, Inc. has released its Dotmax 24I, an IBM Personal Computer-compatible version of its 24-wire Dotmax 24 dot matrix printer.**

The Dotmax 24I reportedly features bit-mapped graphics and block graphic character sets. Principal graphics modes are an 8-bit, 200 by 60 dot/in. resolution image mode and a 24-bit, 360 by 180 dot/in. resolution image mode. Print speed is 80 char./sec. for letter quality and 240 char./sec. for draft quality.

The printer is priced at $1,995.

*Fujitsu America, 3055 Orchard Drive, San Jose, Calif. 95134.*

■ **Intek Manufacturing, Inc. has released its Data Manager multiple device spooler which is said to connect up to five personal computers with RS-232 interfaces to any printer with an RS-232 interface.**

The Zilog Z80A microprocessor-based Data Manager stores finished copy from five computers for final printout on a first-in, first-out basis at a rate the printer can accept, the vendor said.

The system allows each computer to send data at 9.6K bit/sec. and provides 64K bytes of memory storage to accept data from all five computers. The unit has five RS-232C input ports and one RS-232C output port.

The spooler is said to eliminate the need for operator intervention in the printing process.

A single unit costs $795.

*Intek Manufacturing, 780 Charcot Ave., San Jose, Calif. 95131.*

## BOARD-LEVEL DEVICES

■ **STB Systems, Inc. has announced Atta Byte, an add-on board that reportedly gives AT&T Personal Computer 6300 users memory expansion up to 640K bytes.**

The board is said to be available with 128K, 256K or 384K bytes of memory installed to add to the 6300's 256K bytes of memory. The Atta Byte board reportedly occupies one dual connector slot in the 6300. Its price includes Real Corp. PC Accelerator software.

The board costs $395 for 128K bytes, $495 for 256K bytes and $595 for 384K bytes.

*STB Systems, Suite 125, 601 N. Glenville, Richardson, Texas 75081.*

## APPLE

from page 47

business marketplace.

Unlike the other two products, the Macintosh XL was not new. Apple had simply rechristened the Lisa.

Born again, the Lisa was destined for the Macintosh Office, Jobs said. It would meet the needs of the corporate user, who required more memory, a larger screen and a built-in hard disk drive.

Less than four months after that annual meeting, however, Apple said it would halt production of the Lisa. The machine met its end without fanfare; the Pointer Sisters were nowhere to be heard. And now Apple is suddenly shy about its plans, ducking questions about a replacement.

From the outside, it appears that Apple announced the Macintosh XL as a stopgap measure. Actual support for the machine was minimal, users said.

The move bought some time for Apple, which didn't (and still doesn't) have a powerful Macintosh in its lineup. Its presence served to deflect some questions, at least temporarily, on how Apple would serve the corporate market.

"The only reason Apple kept [the Macintosh XL] as a product was so that if someone asked, 'Is there a Macintosh with a hard disk and more memory?' Apple could say, 'Here it is — the Macintosh XL,' " according to Bill Parkhurst, an independent software developer in Los Gatos, Calif.

Parkhurst, who heads a Macintosh special interest group for the Software Entrepreneurs' Forum, an association of independent software companies based in Palo Alto, Calif., said the news didn't surprise most developers. "Most of us recognized quite a long time ago that the chosen product was the Macintosh and that the Lisa would be phased out," he explained.

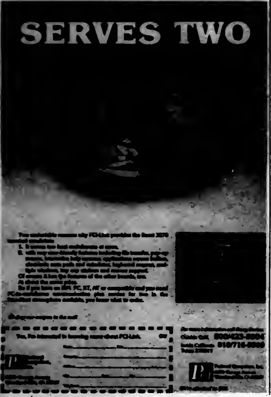
Analysts agreed, attributing the Lisa's demise to its troubled tenure in the industry. Its original $10,000 price tag and its small stable of proprietary software hindered the computer's acceptance, analysts said. Price cuts followed, but the Macintosh gained momentum in the interim.

"To us, the Lisa represented the new technology we wanted to bring out in a low-cost personal computer," said Apple software engineer Larry Tesler, who helped design the Lisa. "The Macintosh represents what we're trying to do even better than the Lisa did."

Apple hopes to win over large corporate users with its Macintosh Office. Its executives have acknowledged that Apple will have to earn its way into the good graces of big business over the next two years to be successful.

But the company has not begun on an auspicious note. With the rapid rise and fall of the so-called Macintosh XL, the company seems to have substituted a makeshift policy for a clear corporate direction.

Perhaps Apple should review the remarks its president, John Sculley, made at the same annual meeting at which the Macintosh XL was unveiled.



Yes, I'm interested in learning more about PCI-Link.

Reach over 65,000 Italian computer professionals.

Advertise in CW Communications' Italian publications and sell your products directly to the fourth largest computer market in Western Europe. According to International Data Corporation (IDC), the world's leading information industry research firm, Italy's total DP expenditures for 1983 were $6.8 billion. IDC forecasts that DP expenditures will nearly triple by 1989 to $18.1 billion.

CW Communications has two publications covering the Italian market: *Computerworld Italia* and *PC Magazine*.

Every week, 35,000 MIS/DP executives read *Computerworld Italia*. Modeled after *Computerworld*, its sister publication in the United States, *Computerworld Italia* covers the latest developments in hardware, software, terminals and supply products.

And every month, 30,000 IBM PC users and potential buyers read *PC Magazine*. The editorial focuses on a wide range of topics including software, hardware, in-depth articles and programs.

CW International Marketing Services makes advertising your products in Italy, and around the world, easy. We have over 30 publications in more than 25 countries. For more information on our wide range of services, call Diana La Muraglia, General Manager, CW International Marketing Services, at (617) 879-0700 or (800) 343-6474. On the West Coast, call Isabella Barbagallo at (415) 328-4602 or (800) 277-8365. Or fill out the coupon below and mail today.

CW COMMUNICATIONS INC.

Diana La Muraglia
General Manager
CW International Marketing Services
375 Cochituate Road, Box 880
Framingham, MA 01701

Please send me more information on:
☐ *Computerworld Italia*
☐ *PC Magazine*
☐ Your other foreign publications
Name ____
Title ____
Company ____
Address ____
City ____ State ____ Zip ____

# IN DEPTH

CW PHOTO BY F. CHARLES [illegible]

system opportunities. It holds that the organizational purpose served by computer applications is either to automate a basic process (subprocess or task) or to provide information for decision making.

This view is concerned primarily with information flows, data bases and the production of reports related to the organization's planning and control operations. I call this the conventional perspective on information systems.

A data processing professional exemplified this view in the early '70s when he advocated a new approach for information systems planning, a top-down method "to focus on the critical tasks and decisions made within an organization and to provide the kind of information that the manager needs to perform those tasks and make those decisions."

The author of a recent book on the health care industry reflects this view when he asserts that "the only computer services that a hospital really needs — the basic financial, billing and accounting operations — could be purchased relatively inexpensively from any service company."

When adherents of the conventional perspective search for information system opportunities, they look for two varieties: management information systems (MIS) and management support systems (MSS). (MSS includes as its two main species decision support systems and executive information systems.) These varieties are intended to serve organizational purposes associated with the conventional perspective, that is, automating basic processes (the domain of MIS) and satisfying the information needs of managers and professionals, needs often closely connected with planning and control decisions (the domain of MSS).

But the conventional perspective, important as it is for identifying and illuminating the significance of these two varieties, offers too limited a view of the world of information systems.

### Clinical laboratory

Consider, for example, how Metpath, Inc. uses systems to compete in the tough, fragmented clinical laboratory industry, where low differentiation of service has led to a lack of customer loyalty and frequent price discounting. Doctors send specimens to the lab for processing and, in return, expect timely, accurate analyses. Metpath enhanced its customer service by installing computer terminals in doctors' offices and linking them to its lab computers. For a small monthly fee, physicians receive test results as soon as they are determined.

From the conventional vantage point, the system might be seen as a transaction processing, on-line data base application providing critical diagnostic information to physicians. But this description captures neither its competitive import nor its innovative character. By changing conceptual lenses and viewing it from a strategic perspective, we see it as an attempt by Metpath to use its information system as a double-edged sword.

First, it builds barriers against new and existing rivals by raising the information systems ante. Second, it enables Metpath to gain an edge over other labs by differentiating an otherwise commodity service. Metpath keeps historical records of patient data on file and offers its customers computerized processing services for billing and accounts payable operations, as well as easy access to stock market quotations from the Dow Jones network.

Finally, the system can expand the services it offers into such areas as diagnosis (when expert systems become available) and drug interaction testing. Referring to the latter, the vice-president for scientific affairs of the American Pharmaceutical Association said: "If there is such a thing as the wave of the future, this is it."

Primed as it is to store patient profile data on such items as drug and food allergies, chronic illnesses and medications taken, the Metpath system will permit physicians to conduct drug interaction tests prior to writing prescriptions. Each of these information system-based hooks serves to differentiate a commodity service and thereby secured the loyalty of the estimated one in five doctors who switch annually from lab to lab in search of lower prices.

### Competitive weapons

The conventional perspective on information systems supplies scant guidance to those who wish to discover such application opportunities or explain their strategic impact. Nor is it of much help in accounting for the extended uses made by American Airlines and United Airlines of their computerized reservation systems, Sabre and Apollo, respectively. Built in the 1970s at a cost of more than $250 million each, these information systems are no longer employed merely as neutral scheduling mechanisms to automate the seat reservation process. Rather, they are being used increasingly as weapons in the struggle for industry domination.

Sabre and Apollo give priority listing to American and United flights when travel agents request information on their computer terminals. An agent who uses the Sabre system and requests a listing of flights from New York to Los Angeles with stops in between knows that the first few items to appear on the screen may not show the most direct way, nor the least expensive way, but for sure they'll show the American way.

American and United have used their reservation systems to preempt the major channel of distribution. In the computerized travel agency market, the two form a powerful duopoly with shares of 41% and 39%,

THE FLOPLESS FLOPPY

That's right. A StorageMaster* diskette is the one you can count on again and again for consistent performance. Because it's made beyond the standards by one of the world's largest manufacturers of storage media.

So if you won't settle for anything less than extraordinary performance every time, reach for the flopless one. Reach for a StorageMaster diskette. For the location of your nearest distributor, see your local Yellow Pages or call toll-free 1-800-232-6789 ext. 370.

3018 Copyright © 1985 Control Data Corporation.

CONTROL DATA

> *In addition, Sabre and Apollo have become vehicles of diversification and growth, propelling American and United into new lines of business.*

respectively. The crumbs (the remaining 20%) have been left to the competition. While Delta, Eastern and TWA have developed smaller systems, the other carriers are at risk. As one of the less fortunate put it: "We clearly didn't pay enough attention, and now it's a direct threat."

More than 80% of the nation's 20,000 travel agencies, accounting for 20% of airline ticket sales, are computerized. In regions where the airline with the reservation system has numerous flights, the prioritization procedure can lead to as much as 20% more revenue.

In addition, Sabre and Apollo have become vehicles of diversification and growth, propelling American and United into new lines of business. According to the president of American, "This industry needs every cent it can generate. We've got to be creative about using our huge asset base to develop new revenues. We're looking at businesses we can be in at low costs because some of the links are already in place." These links form, in American's words, "the world's most powerful nonmilitary computer system."

According to the vice-president of marketing and automation systems at American, 65,000 devices hang off the network, which runs 23 hours a day, 365 days a year and keeps track of 6.5 million domestic and international airfare combinations, more than 10,000 daily fare changes and the schedules of about 650 airlines around the world. In 1983, for example, it handled more than 55 million calls at its four reservation centers.

To exploit excess capacity on Sabre, the carrier recently formed American Airlines Telemarketing Services, which performs services such as conducting marketing surveys and taking pledges generated by telethons. American expects that the fee income from these operations will be supplemented in the future when it uses its network to offer consumer products to home computer users.

### New variety

The two cases just described are instances of strategic information systems, information systems used to support or shape the competitive strategy of the organization. Strategic information systems represents a new information system variety, radically different in organizational use from those countenanced by the conventional perspective.

The conventional perspective is unsuited for guiding the systematic search for strategic information systems opportunities and is incapable of explaining the strategic significance of applications. Believers in the conventional gospel on information systems are unable to discern most strategic information systems opportunities. Lying still further beyond the conventional field of vision, the entire spectrum of strategic alliances supported or shaped by information systems also goes undetected.

Paine Webber, for instance, seized an alliance opportunity in 1984 that no other brokerage house had previously been able to capture. It negotiated a pact with the State Street Bank and Trust Co. of Boston enabling it to participate in Masterteller, the nationwide automated teller network run for banks by Mastercard International, a credit card and traveler's check organization owned by 24,000 banks and other institutions. The Masterteller network lets cardholders withdraw cash from more than 1,500 automated teller machines throughout the U.S.

Up to this time, banks had been very careful to exclude rivals offering competitive financial services from entry to their networks. Indeed, two of the largest bank-owned nationwide networks, the Plus and Cirrus systems, rejected requests from Merrill Lynch and the Fidelity Group, a Boston-based mutual fund company to establish similar arrangements.

New Paine Webber customers can use credit cards issued by State Street to get the same 24-hour access to cash that bank cardholders enjoy. Because of this alliance, a cardholder with a Paine Webber account can withdraw money at automatic teller machines across the country. The story of how Paine Webber will use this new alliance in packaging its products has yet to unfold. In any case, the deal illustrates how the broker capitalized on information systems assets developed by others to serve its own strategic ends.

### Joint venture

Another form of strategic alliance involving information systems is illustrated by a recent joint venture. IBM and Merrill Lynch announced in 1984 the formation of International Marketnet, a new information service intended to provide users of IBM Personal Computers with stock quotations, investment data, analytical processing, financial software and so on. The service will enable end users to communicate via satellite links with Merrill Lynch's host computers. Monchik-Weber Corp., a software house specializing in the securities

FREEDOM of INFORMATION

CPT Translates Office Automation Into True Information Management.

From powerful, standalone workstations to sophisticated communication networks, CPT offers more than office automation. We offer true information management. We give you freedom of information through a system of flexible and compatible hardware, plus a wide variety of fully integrated software. All at affordable prices, and all backed by worldwide support and service.

Expandable, Upgradable Systems. You can begin with a standalone CPT Phoenix JR™ workstation; then, gradually and economically, upgrade to a comprehensive information management network.

You can integrate word, text and graphics processing; intelligent mass storage and shared resources; electronic mail; electronic calendars and more. You can choose from a variety of quality printers including a high speed letter quality laser printer.

Your CPT information management system also provides valuable communication interfaces to personal computers, mainframe computers, outside databases and other information resources.

Most important, you can meet each new requirement without costly conversions or major operator training.

A Pioneer – and Still Ahead. CPT pioneered office automation. Now we're the leader in providing true information management. Find out how CPT gives you freedom of information. For your nearest CPT dealer call 800-447-4700 ask for CPT.

MORE THAN OFFICE AUTOMATION...
IT'S INFORMATION MANAGEMENT...

CPT.

8100 Mitchell Road, P.O. Box 295, Minneapolis, Minnesota 55440-0295

industry and acquired by McGraw-Hill, Inc. after International Marketnet opened its doors, won the contract to develop the systems that will run the service.

International Marketnet is a 50-50 joint venture of IBM and Merrill Lynch. The venture's customers will be drawn from Merrill's 10,000 account representatives, other brokerage houses, commercial banks, money managers and clients of these firms. For IBM, the alliance supports its strategy of market expansion; for Merrill, the venture supports plans to diversify into the information services industry and to reduce and eventually eliminate the fees it now pays to Quotron Systems, Inc. for the use of its stock-quotation system.

These alliances, as well as the examples detailed earlier, exemplify the strategic use of information systems. Representing instances in which competitive strategy is supported or shaped by the application of computer technology, they mark a dramatic turning in the brief evolutionary history of information systems. But to appreciate more deeply this break with the past — this movement from the conventional to the strategic — requires something more than the trotting out of strategic information systems cases. What we need to show are examples of firms that have developed a vision of information systems to guide their strategic course.

### Strategic vision

To see that an information system application is a strategic information system, we need to understand how information systems are used to support or shape the firm's competitive strategy. This ability to see and understand I call strategic information systems vision.

A firm with a powerful strategic information systems vision zealously encourages the search for opportunities to use information systems to gain a competitive edge. And when they are discovered, it marshals the proper resources to support them. In some cases, strategic information systems vision develops into an image of the future that top management uses to navigate the firm's strategic path.

How can we determine whether a firm possesses this vision? The best test is to examine what the firm says and does. If it purports to appreciate the strategic significance of information systems and if it launches thrusts supported or shaped by systems, we are justified in believing that strategic information systems vision is operating.

It would be preferable, to be sure, to explore from within, to observe in detail the strategic decision-making process and how information systems are woven into the fabric of strategic programs, before making a judgment.

### Dun & Bradstreet

The Dun & Bradstreet Corp. traces its origin back to 1841 when Louis Tappan, a New York dry-goods jobber, founded the Mercantile Agency, the first credit-reporting firm in the U.S. Within a decade, the Bradstreet Agency became the second company to enter the field. By 1890, Mercantile (now run by R.G. Dun) had established 69 branch offices in major business centers.

Being the first two firms to create nationwide networks, Bradstreet and Dun dominated the credit-reporting business. In the 1870s, Dun employed more than 10,000 reporters or investigators and received some 5,000 requests a day for information. In 1933, the two firms merged to form Dun & Bradstreet.

By 1978, Dun & Bradstreet had become a $763 million diversified information services company with four major divisions: Business Information Services, Publishing, Marketing Services and Broadcasting. Business Information Services contributed 38% of the revenues and 27% of the operating income.

In 1979, Dun & Bradstreet recorded its best year ever and made two significant strategic moves. It purchased for $164 million National CSS, Inc. (NCSS), a leading computer service company with a nationwide, 80,000-mile time-sharing network, and agreed to acquire its sixth television station together with half-a-dozen small cable systems. This move gave Dun & Bradstreet its first hands-on experience in the growing cable industry. The NCSS acquisition became part of Dun & Bradstreet's Business Information Service Division, while the television station and cable systems were to become part of the broadcasting group.

In its annual report, Dun & Bradstreet explained how it saw these moves as consistent with its strategic vision: "There are three principal resources that are central to the continued success of the Dun & Bradstreet Corporation: our ability to collect timely and relevant information for the decision-making use of our various customer groups; our capacity for applying technology effectively to maximize information delivery and utility; and the management to anticipate the needs of our customers and, in partnership with our highly skilled people, to provide quality products and services worldwide."

### Information services giant

At the close of 1983, Dun & Bradstreet had become a $1.5 billion information services giant. The contribution of the Business Information Services Division had risen in four years to 45% of total revenue and 34% of operating income. During the year, Dun & Bradstreet made two significant strategic moves. It acquired McCormack & Dodge Corp. (M&D), a major software company specializing in financial and human resources packages, and departed from the broadcasting industry by selling its stations and systems.

If we said we have
display stations, print
flexible disks and

would you think we're

Good. That's exactly what we are prepared to do. Because not only can we promise a complete line of products designed to meet your performance and price needs, we can deliver it. Today.

We can meet your performance needs with tape drives that are setting industry standards for high reliability subsystems. With communications clusters that offer the broadest choice of ergonomically designed, easy to own PCM products.

In 1984, Dun & Bradstreet underlined its focus on business services and information by acquiring through merger (a $1.[illegible] billion stock transaction), A.C. Nielsen Co., the nation's leading consumer research concern.

Dun & Bradstreet's recent evolutionary history reflects strategic information systems vision. Its management has executed strategic moves supported or shaped by information systems, moves that serve to support or shape the company's long-term objective of concentrating its efforts and resources in the business services and information industry.

In 1979, Robert Weissman (NCSS's president when it was acquired by Dun & Bradstreet and now Dun & Bradstreet's president and chief operating officer) proclaimed: "NCSS and Dun & Bradstreet are the best fit in the information industry — data from Dun & Bradstreet operating companies plus NCSS leadership in computer services. We're going to rewrite the book on combining information and technology to develop new products for our customers."

The battle cry voiced by Weissman is reflected in the following moves made during the 1979-1984 time period.

**Acquisition of NCSS.** This major diversification move enabled Dun & Bradstreet to enter the time-sharing business, a new market pioneered by NCSS, and to exploit NCSS's information system resources (its hardware, software and highly skilled work force) synergistically.

Within a few months after the acquisition, 12 joint projects were initiated, among them Duns Vue, a new credit product, and Moody's Municipal Credit Report Service, both designed for electronic delivery over the NCSS network. But the NCSS time-sharing business has been a disappointment.

As demand declined over the past five years, primarily because of the rapid spread of microcomputer processing, Dun & Bradstreet has had to find new uses for its valuable NCSS resources.

**Acquisition of McCormack & Dodge.** Like the NCSS purchase, this alliance illustrates a major diversification move with a dual purpose. Dun & Bradstreet expects to exploit M&D's software, systems know-how and 2,000-member customer base synergistically across its various product lines. And it expects M&D, an established leader in its market niche, to continue its impressive growth.

Already, joint projects are emerging between M&D and Dun & Bradstreet's other units. M&D's PC-Link allows users of IBM's Personal Computer to retrieve and transfer mainframe data. This product ties directly to Dunsplus, which is the result of efforts by an NCSS division (now called Dun & Bradstreet Computing Services) and a strategic information systems alliance struck between Dun & Bradstreet and IBM.

**Acquisition of Nielsen.** In the case of the NCSS and M&D acquisitions, Dun & Bradstreet exploited the information systems assets of others. With the Nielsen merger, on the other hand, Dun & Bradstreet new opportunities to exploit its own information system assets. Here, there are both economy-of-scale (possible consolidation of information system services) and economy-of-scope opportunities, which have yet to unfold.

**Development of Official Airline Guide/Electronic Edition.** Dun & Bradstreet's Official Airline Guides provide information on North American, Worldwide and Air Cargo flights. In 1983, Dun & Bradstreet announced an electronic version of these guides. The Official Airline Guide/Electronic Edition can be accessed by computer terminals. It lists the information contained in the print editions, as well as fares. Users can query the flight data base for comparative fare information within specified arrival or departure periods and for lowest fares between two points.

The Official Airline Guide/Electronic Edition, however, does not handle reservations. Dun & Bradstreet distributes its product directly or through such information networks as Compuserve, Inc., Dialcom, Inc., Dow Jones News/Retrieval, Bell Canada and Viewdata.

The Official Airline Guide/Electronic Edition is an example of an innovative strategic maneuver targeted at customers who wish to reduce their travel costs — the third fastest rising corporate expense. In the past, travelers generally relied on agents for such information and, depending on the reservation system used by the agent, received flight alternatives giving priority to the airline providing the system. Now, with the Official Airline Guide/Electronic Edition, travelers can get objective data, favoring only the airlines with the lowest prices. The system will also include international fares, as well as hotel and car rental rates.

> ”
>
> *The Official Airline Guide/Electronic Edition is an example of an innovative strategic maneuver targeted at customers who wish to reduce their travel costs — the third fastest rising corporate expense.*

disk and tape drives,
ers, computer tapes,
other accessories,

handing you a line?

And with high performance disk drives whose greater flexibility in features are now being acknowledged in the newest offerings of the "Industry Leader."

We can meet your price needs through the Memorex Finance Corporation, which offers you total financing flexibility. From quantity purchase programs to competitive leasing plans, we can suit your company's budget and schedule demands.

So whether you're looking for disk or tape subsystems, printers, display terminals and controllers, or computer media, you can have it all. And you can have it all now.

You see, only Memorex can hand you this line. A complete one.

The alternative.
When it matters, make it Memorex.™

MEMOREX
A Burroughs Company

**Creation of Dunsplus.** By forming strategic information systems alliances with IBM, Lotus Development Corp. and Softword Systems, Dun & Bradstreet created a unique product complementing its other offerings as well as providing a stand-alone, integrated professional workstation. Dunsplus consists of an IBM Personal Computer (Dun & Bradstreet forged an agreement with IBM to act as a value-added remarketer), spreadsheet (1-2-3) and word processing (Multimate International Corp.'s Multimate) programs and specifically developed Dun & Bradstreet software (from NCSS) outfitting end users with electronic mail, file maintenance, data integration and other capabilities.

As incentives to purchase Dunsplus, Dun & Bradstreet includes as standard features one year's sign-up charges for Western Union's electronic mail service and its own Official Airline Guide/Electronic Edition. Access to Dun & Bradstreet's extensive collection of electronic data bases, and others as well, is a relatively straightforward procedure with Dunsplus.

Built into the offering is PC-Link, M&D's micro-to-mainframe utility program, which allows Personal Computer users to transmit and receive data from corporate data bases. Within the first six months after its introduction in January 1984, Dunsplus attracted more than 50 major corporate customers.

**Development of Dunsnet.** This recent Dun & Bradstreet offering is a packet-switched telecommunications network, similar in function to GTE's Telenet and Tymshare, Inc.'s Tymnet. With Dunsnet, Dun & Bradstreet offers its customers value-added networking services and distributed processing through the use of such microcomputer systems as Dunsplus. NCSS and other Dun & Bradstreet units can also make use of the network.

Dunsnet enables all Dun & Bradstreet users to access its data bases using one standard procedure. It reduces Dun & Bradstreet-generated revenues for Telenet and Tymnet. Dunsnet represents a strategic growth move for Dun & Bradstreet, a kind of forward integration that takes the company a step further toward its goal of being a full-service provider of information services and data to its clients.

## Forward look

From this short selection of strategic actions taken over a five-year period, it seems evident that Dun & Bradstreet possesses strategic information systems vision. If it didn't, how else can one account for such efforts to use information systems to support strategy. The reader may object that because Dun & Bradstreet is an information services company, much of the moves cited is natural and has nothing to do with strategic information systems vision.

But this objection is not persuasive. Dun & Bradstreet had choices. It wasn't forced to acquire M&D or Nielsen. It wasn't bullied into forming an alliance with IBM to market the Personal Computer and build a product around it. Dunsnet was not inevitable. Different data-rich firms have made different strategic thrusts, some emphasizing information systems, others not. Dun & Bradstreet itself didn't have such a clear vision of its future in 1978, as indicated by its broadcasting acquisitions. After acquiring NCSS, however, the die seems to have been cast, with Wiseman probably sounding the clarion call.

The current evolution of Dun & Bradstreet, inspired by strategic information systems vision, is far from complete. By the end of this decade, in all likelihood, it should emerge as one of the leading information services firms in the world, providing a full line of products supported or shaped by information systems.

## McKesson Corp.

Another example of a firm that has developed a powerful strategic information systems vision is the McKesson Corp., formerly Foremost-McKesson and originally McKesson-Robbins. In 1984, it was the nation's largest independent distributor of

Free buy or sell quote on VAX, RA-81's, TU 78's, VT220's, printers, networking, cluster gear and other DEC compatibles from...

DEC®
EXPRESS

plus the opportunity to earn Sharper Image® gift certificates in our EXCLUSIVE FREQUENT BUYER PROGRAM. Leasing options available. Call DEC EXPRESS at

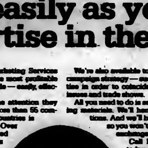
(800) 426-4341 Outside California
(408) 241-3677 California

Free Call. Free Quote. Free Catalog.
Free gift certificates for the Frequent Buyer.

Free gift catalog available.

DEC EXPRESS is a subsidiary of [illegible] Computer Corporation.

How to advertise in every major computer market in the world as easily as you advertise in the U.S.



CW INTERNATIONAL Marketing Services will help you penetrate the most profitable computer markets worldwide — easily, effectively, and economically.

Your ads will receive the attention they deserve. Our network of more than 55 computer publications in 25 countries is the largest in existence. Over 9,000,000 computer-involved people read our publications every month.

With more than 10 years' experience in international marketing, we're the only service of our kind. We can help you make your ads more effective. Our local offices can translate your ads for a 15% surcharge on the space you purchase.

We'll help you increase your market penetration. Because we place your advertising through our U.S. office, you won't have to pay the VAT (value added tax, ranging from 8-20% of your ad-space purchases) which is regularly charged on all advertising placed abroad. And you'll be able to advertise in even more markets when you take advantage of our corporate discounts.

We're also available to advise you on your campaign strategy — such as when to advertise in order to coincide with special-focus issues and trade shows.

All you need to do is send us your advertising materials. We'll handle all the transactions. And we'll bill you in U.S. dollars so you won't have to worry about exchange rates.

Call Diana La Muraglia today if you want to reach the computer buyers in any of the following countries: Argentina, Australia, Brazil, Canada, Chile, Denmark, Finland, France, Greece, India, Israel, Italy, Japan, Korea, Mexico, Norway, People's Republic of China, Saudi Arabia, South Africa, Southeast Asia, Spain, Sweden, The Netherlands, United Kingdom, Venezuela and West Germany.

You can reach her toll-free at (800) 343-6474. In Massachusetts call (617) 879-0700. Or you can reach her through Telex, at number 95-1153. Or, if you prefer, fill out the coupon below and return it today. Do it now. The sooner we hear from you, the sooner you'll hear from our readers.

CW COMMUNICATIONS/INC.

Diana La Muraglia
General Manager
CW International Marketing Services
375 Cochituate Road, Box 880
Framingham, MA 01701

☐ Please send me more information about your International Marketing Services.
☐ Please have a sales representative call me.

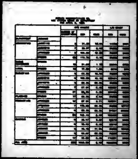
Name ________
Title ________
Company ________
Address ________
City ________ State ________ Zip ________
Telephone ________

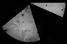
# IF YOU DON WARE YO
# YOU'LL LOSE MORE THA
# YOUR DP INVENTORY

# The SAS System. . .

# The Solution for Your Information Center

**Now Available for IBM PC/370**





[illegible]

☐ I want to learn more. Send me The SAS Solution packet.
☐ Have a sales representative call me today!

Please complete this coupon or attach your business card.

Name ____________________________________________
Title ____________________________________________
Company ________________________________________
Address _________________________________________
City____________________ State______ ZIP__________
Phone (______)___________________
Hardware _____________________
Operating System________________

SAS Institute Inc.
SAS Circle, Box 8000, Cary, NC 27511-8000

ethical and proprietary drugs, toiletries, fragrances and sundries; wine and spirits; and industrial and specialty chemicals.

Restructured in the late 1930s, McKesson diversified over the next 50 years into such businesses as alcoholic beverage distribution, dairy products (through a merger with Foremost Dairies) and pasta and dehydrated vegetable manufacture (through the acquisition of C.F. Mueller Co.). In 1984, the new McKesson announced that it was leaving the food business (having sold Foremost and Mueller in 1983) to concentrate its resources on the value-added distribution of a variety of products.

> ”
>
> *These strategic moves run the gamut from those designed to exploit scale and scope economies, to growth and alliance maneuvers to expand into new markets.*

What is shaping McKesson's new strategic direction is what is shaping Dun & Bradstreet's: strategic information systems vision. Top management believes that the name "McKesson Corporation" now "reflects our history, the present structure of our business and the path we are traveling."

Thomas Drohan, McKesson's former president, said in the 1983 annual report: "Perhaps the single greatest advantage that the McKesson distribution companies enjoy has been — and will continue to be — in computer technology, where our size and diversity have enabled us to achieve the necessary critical mass. Our data processing resources now involve 550 people and an annual budget of more than $65 million. We intend to continue the proliferation of this technology among our current distribution businesses and to seek out opportunities to apply it to other distribution-related businesses. This shift in emphasis — making value-added distribution our primary thrust with a secondary thrust in certain proprietary product areas — reflects the facts as they are today."

McKesson sees a direct connection between its ability to gain competitive advantage and its use of information systems to support and shape strategies aimed at this objective. Over the past 10 years, the company has introduced computer-based goods and services to help it gain an edge with both its suppliers and its customers, an edge that translates into a distinct advantage over other distributors. These strategic moves run the gamut from those designed to exploit scale and scope economies, to growth and alliance maneuvers to expand into new markets. Among the alliances implemented by McKesson, the following are noteworthy:

**CosMcK/Econoscan.** CosMcK, a computer-based merchandising program created in 1981 for druggists, supermarkets and mass merchandisers, helps retailers stock, price-label, rotate and display merchandise according to the marketing reports it generates. Covering 20 departments in 1982, it now extends to 28 categories, such as over-the-counter drugs, pet care and school supplies.

Econoscan, a computerized order-entry system, enables a retailer holding an Econoscan scanning device to record data from shelf labels and then transmit the captured data in the form of an order over telephone lines to a McKesson distribution center, at the rate of 600 items per minute. McKesson fills the order overnight and delivers it the next day in tote boxes arranged to correspond to the various shelf divisions of the retailer's store.

**McKesson Chemical.** This division, the nation's leading full-line distributor of industrial chemicals, implemented a computer-based service for its customers that saves them costly inspection time and enhances McKesson's image as a high-quality, reliable distributor. At selected chemical distribution centers, McKesson installed highly sensitive instruments to analyze the chemical composition of substances. This ensures, for example, that chemical solvents meet stringent customer standards. The instruments are tied via telephone lines to a McKesson computer at its research center in Dublin, Calif., so that the data can be interpreted and checked for compliance.

This is another of the many differentiation-based strategic thrusts supported by McKesson's information systems. McKesson Chemical, like the drug and alcoholic beverage division, also offers its customers an on-line order-entry system designed to streamline ordering, inventory control, purchasing, accounts receivable, delivery and invoicing procedures. For the chemical division, it provides instantaneous information on inventory, customer needs and the safe handling of the more than 1,000 chemical products it sells. Most likely, economies of scope based on order-entry systems know-how are at work here.

**Pharmaceutical Card System.** PCS, a prescription drug claims processing system, led McKesson to spin off a special business unit to exploit its potential. Introduced a few years ago, PCS now processes more than 27 million claims from 2.3 million cardholders covering 6.5 million people. Employers issue PCS cards as an employee benefit.

More than 45,000 pharmacies, representing more than 80% of the

MAN SAVED FROM
A SEA OF PAPER

Huge oceans of information can be standardized into computer output microfiche (COM) that takes up less than 5% of equivalent paper space.

And it's simply the most cost-effective storage/reproduction medium available.

For example, a 1,000-page report using old reproduction methods would cost $30.00 and take 1 hour to reproduce. An NCR COM can perform the equivalent task in 15 minutes for $1.25!

NCR's COM systems can be a real life saver.

Computer Output Microfiche

NCR
Micrographic Systems Division

Micrographic Systems Division, 950 Logue Avenue, Mountain View, CA 94043, (415) 962-7400, (800) 227-9964

#2 In A Series: Setting Standards In Mainframe Applications Software.

# Many Software Companies Claim To Have Set Standards. Only One Has Actually Set Them Down On Paper.

*"Every industry starts at a stage of 'every man for himself,' and some industries never outgrow it. In the applications software business it has become obvious that a criteria of excellence is needed. Such standards will be the way by which customers and users will be able to compare products. It will give us all an idea of what application software should be."*

The words above are taken from a 35-page white paper written by Software International, the company whose first general ledger package actually started the applications software industry 15 years ago.

Entitled, "Setting Standards In Mainframe Applications Software," the report may be the first of its kind—the first ever to set down on paper the standards appropriate for application software products.

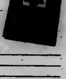
In it are ten guidelines suggested as standards in the design of applications software as well as standards which cover product installation, customer service and support. In short, standards for how a professional software vendor should build its products and how it should treat its customers.

We think you will find it a concise, common-sense collection of ideas—particularly vital to you if you are evaluating software packages or developing your own.

It's yours for the asking.

Simply clip the coupon or call toll free 1-800-343-4133, in Massachusetts 1-800-322-0491.

Software International Corporation
One Tech Drive
Andover, MA 01810



Dear Sir: Please send me a copy of "Setting Standards In Mainframe Applications Software."

Name/Title ____________________
Company ____________________
Address ____________________
City ____________________
State ______________ Zip ______
Phone ____________________

[illegible]

**SOFTWARE INTERNATIONAL**

Software Thinking That's Impossible To Ignore.

CONVERT
MAINFRAME REPORTS
TO MICROCOMPUTER FORMATS

Convert reports to these and other popular formats:

- Lotus 1 2 3®
- dBASE II and III®
- Multiplan® & Visicalc®
- Word Processors
- AND Convert Micro Software Reports to Other Micro Formats!

Single copy only $95. Site and OEM licenses available.

Bridge the incompatible software gap with PRO: Reformat, edit, and move data easily. Works with all IBM PCs and PC-compatibles. PRO takes over where your mainframe link leaves off.

To order call toll free (800) 442-0812. In California, call (800) 442-8544. Major credit cards accepted.

[illegible]/CORPORATION 47 Sixth Street PO Box 142 Petaluma, CA 94953

## IN DEPTH/STRATEGIC PERSPECTIVE

> ***Whatever Action's motives, McKesson's aim was clear: to expand the scope of its distribution business and transform the cottage industry of software distribution (with after-tax margins of 4% at most) into a larger, more profitable game.***

nation's retail druggists, fill prescriptions for PCS cardholders. Coverage is offered by 155 insurance companies in the U.S. and Canada. Data from pharmacists is transmitted to a central McKesson computer for processing. Claims are completed automatically, and tapes are forwarded to third-party reimbursers.

In itself, PCS represents a strategic diversification maneuver. Perhaps even more interesting is the continued expansion of McKesson's PCS operation, symbolizing the power of the company's strategic information systems vision. As claim data is collected by PCS, a special unit, Pharmaceutical Data Services (PDS), uses its software to analyze the data and produce a series of marketing reports targeted at major drug manufacturers, financial institutions and government agencies. The reports include analyses of prescription drug use by hospital, nursing care facility and so on. It is capable of analyzing the flow of pharmaceutical products through the health care system.

In 1983, PCS acquired Drenden/Davis Organization, a medical research company that collects data on drugs prescribed by physicians. This, of course, will become part of PCS's growing data base and move the unit closer to its goal.

**Acquisition of SKU.** In 1983, McKesson joined Action Industries, Inc., a Pittsburgh maker of household and hardware items, in a 50-50 venture in which they acquired SKU, Inc., a microcomputer software distributor. The leader in the embryonic micro software industry at the time was Softsel Computer Products, followed by Micro D and SKU. The market for personal computer software, then at $2.1 billion, was projected to reach $11.7 billion by 1988, with 25% handled by independent distributors.

Whatever Action's motives, McKesson's aim was clear: to expand the scope of its distribution business and transform the cottage industry of software distribution (with after-tax margins of 4% at most) into a larger, more profitable game. McKesson planned to use previously developed information systems as the synergistic fuel for its entry vehicle. The computerized order-entry systems and other proprietary products it provides to more than 14,000 mass merchandisers, supermarkets and other outlets, would be tailored to this new marketplace. These information systems would not be used merely as aids to improve efficiency but as weapons to shape competitive strategy.

"The name of the game," McKesson's chief executive officer said at the time, "has become adding value to distribution. Our primary goal is to set ourselves apart from the competition in dramatic enough ways that we become the first distributor a supplier thinks of. At the other end, by tying your customers to you as tightly as possible, you get more and more of their business as they grow."

With the past as prologue to the future, current and new participants in the software distribution industry could expect McKesson to use its information systems to gain competitive advantage by:

- Establishing on-line links with software suppliers and retailers.

YOUR IBM 3270 AND YOUR IBM PC NOW HAVE SOMETHING IN COMMON BESIDES THEIR PARENTS.

THEIR PRINTER.

It's one thing for a high speed dot matrix printer to be plug-compatible with the IBM 3270 system.

It's quite another for the same printer to work in the ASCII universe where IBM's PC communicates.

But the Datasouth CX 3180 is quite another kind of printer.

First, the CX 3180 does more for less. Because while the 80 cps version of the IBM 3287 costs $4800, and the 120 cps version costs $6000, the CX 3180 cruises at 180 cps and costs only $3195.

Second, the CX 3180 is truly plug-compatible, with a coax interface for the 3270 world and a parallel interface for the PC world. With no black box and no extra cables.

The CX 3180 even features dual legends on its sophisticated front panel controls. One set emulates the IBM 3287 and the other works for your PC—or for any other ASCII computer. And the parameters are switch-selectable.

The CX 3180 is also a printer in the Datasouth high performance tradition. Which means it's one of the most rugged and sophisticated printers ever made.

So if you want the best of both worlds, get the one printer that does it all: the Datasouth CX 3180.

For more information about the CX 3180 and the whole family of high performance Datasouth printers, call toll-free.

IBM and IBM PC are registered trademarks of the International Business Machines Corporation.

south

AVAILABLE NATIONWIDE
THROUGH OUR NETWORK OF
SALES AND SERVICE DISTRIBUTORS

Datasouth Computer Corporation
Box 240947 • Charlotte, NC 28224
704/523-8500 • Tlx 6843018 DASOU UW

CALL TOLL FREE:
1-800-222-4528
Extension number 564.

- Providing information to suppliers and retailers to help them better manage inventories, collect and analyze market data and plan sales campaigns.
- Providing retailers with shelf management plans, price labels, inventory systems and so on.
- Conducting computer-related technical seminars for suppliers and retailers.
- Joining with software suppliers to develop new products.
- Marketing associated services through its network.

Unfortunately for McKesson and Action, however, this strategic alliance failed. In August 1984, the partners announced they were writing off their combined investment of $8 million and discontinuing the operations of SKU.

A spokesman for McKesson said that "the market for computer software hasn't developed as we had anticipated." The parties were unable to stem accelerating losses at SKU.

## Considerable risks

I include this example of a failed strategic thrust to emphasize the point that strategic moves entail considerable risks, and neither information systems support nor shaping nor anything else can guarantee success. What looked like a promising move failed because market demand was misread.

While this venture failed, another seems headed for success. In 1983, McKesson purchased 3 P.M., a software developer and marketer of packages for pharmacies and florists. In 1984, McKesson negotiated a pact with the Florists' Transworld Delivery Association.

Under the terms of the agreement, McKesson will deliver, install and maintain personal computers and systems intended to handle a florist's business management functions such as payroll and accounts receivable and payable. It expects sales from this new venture to total about $75 million over the next five-year period.

## Banc One

The final example of a successfully developed strategic information systems vision involves one of the most innovative and entrepreneurial firms in the financial services industry, Banc One of Columbus, Ohio. John G. McCoy, the chief executive officer of this multibank-holding company formed in 1967, retired in 1984 at age 71 after 25 years in that position. When he took the reins at City National Bank (Banc One's forerunner) from his father in 1959, the bank had less than $150 million in assets and primarily business customers.

With assets of more than $7 billion and customers drawn primarily from the consumer sector, Banc One ranked in 1984 in the top 10 among the 100 largest banks in the U.S. on three commonly acknowledged measures of superior performance.

Through an ongoing series of mergers, it now controls 22 affiliate banks in Ohio. For the 16th consecutive year, net income and earnings per share increased. In the 1980-1983 period, net income skyrocketed from $32.8 million to $83.3 million, employees from 3,145 to 6,380 and branch offices from 187 to 214.

These figures represent an extraordinary record of profitability and growth. How can it be explained? Why has Banc One, a relatively small, local bank in 1967, been able to succeed in the increasingly competitive financial services industry, where the competition consists not only of banking colossi like Citibank, Chase Manhattan and Chemical Bank but also of retail giants like Sears Roebuck & Co. and financial supermarkets like American Express?

While a number of explanations — running from luck to charisma — have been suggested, the most convincing account of Banc One's success can be given in terms of its powerful strategic information system vision — a vision embodied, to be sure, in McCoy, but a vision nevertheless of the integral role to be played by information systems in the bank's strategic evolution.

McCoy, like some of his colleagues, long believed that banks competed at a disadvantage vis-a-vis such competitive rivals as Sears or American Express. While the latter were free to develop an almost unlimited product portfolio or expand without geographical limit, banks were handcuffed in these two strategic areas by federal and state regulations. Unless banks could find ways

Do you know who's accessing your CICS system?

ALERT/CICS™ customers can rest easy. They *know* that ALERT/CICS is not only easy to use, but is also a comprehensive CICS security system.

With ALERT/CICS each authorized user is only permitted to access the transactions, programs, files, and fields within maps that were defined for that user. Terminal security is also available for each of these access levels.

ALERT/CICS customers also love its modular design. They can turn on as much or as little security as they want. This makes it easy for them to "phase in" ALERT/CICS's security.

But what really makes ALERT/CICS great is that it's completely menu-driven. ALERT/CICS customers do not have to learn a rules language. They simply fill in the blanks of the security screens.

So if you're uncertain about the security of your CICS system, call us today at 800-848-4640 to find out more about ALERT/CICS. And start resting easy!

Goal Systems
Software Solutions

THE COMPANY TO WATCH

Goal Systems International Inc.
Goal Systems Building
5455 N. High Street
Columbus, Ohio 43214-1193

around the regulations or get them changed in their favor, they faced the growing prospect of erosion in some of their major business lines.

McCoy's strategic response to these threats was twofold. First, to overcome the geographical expansion constraint, he formed the Banc One holding company, which permitted the acquisition of other banks but not across state lines.

Second, to overcome the product development restriction, he encouraged his managers to search for new products that would yield new sources of income and would protect the bank's cash flow stream from exposure to interest-rate fluctuations.

Thus, expansion through acquisition and product innovation were two strategic thrusts that Banc One would follow in its strategic journey. Both, it turned out, were precisely the kinds of movements that could be supported or shaped by information systems.

McCoy developed his strategic information system vision early. When he assumed the presidency, one of his first moves was to seek board approval for an annual research and development budget, not to exceed 5% of annual profits. He won approval, and every year, Banc One has been able to experiment, primarily in the area of information systems.

In 1966, for example, it introduced the first BankAmericard credit card service outside California. In 1967, it initiated a major on-line credit card processing network that today spans more than 30 states. In 1971, it joined with IBM in making the first significant test of point-of-sale systems using magnetically encoded cards. In 1980, with others, it conducted the first test of in-home banking through the use of customer televisions and the telephone system.

From the 1960s, McCoy realized the importance of information systems in the financial services industry. In a recent annual report, he explained why Banc One was so eager to become the first Bank of America licensee and what made him think it was such a good idea: "Well, there was some luck involved, but you have to remember that was the time when the computer was first beginning to produce important changes in banking. We thought the credit card was an idea whose time had come because of the new computer capability.

"The first on-line computer systems in banking were designed for credit card authorization. We had one of the first ones here in Columbus. We committed major efforts to computer development in those early years, and we still do today, I might add. By 1970, to tell you how this innovation happens, we began to install the first automatic teller machine equipment in our Upper Arlington branch because we saw it as a way to link the customer, with a plastic card, directly to the computer."

## Processing services

As Banc One's reputation for information system innovation grew, other firms approached it for processing services. In the late 1970s, Merrill Lynch contracted with Banc One for data processing and Visa debit card issuance services associated with its new cash management account (CMA) service. As a result of this alliance, now also negotiated with other brokerage houses, Banc One is one of the nation's three largest Visa processors.

The primary vehicle to expand Banc One's processing services — related chiefly to credit and debit card processing outside Ohio banking markets and producing more than 30% of the corporation's net income — is the Financial Card Services Division. This spin-off has had an impressive growth record.

In 1983, the cardholder account base processed by Financial Card Services grew by 41.3% to more than 3.9 million. Of these accounts, 14% are Banc One affiliate banks' customers and 7% are Banc One customers originating from outside our market area, while 79% are derived from third-party processing for other banks, thrifts, credit unions, finance companies and brokers. Financial Card Services revenues grew 36% in 1983.

Late in 1983, a new four-year contract was negotiated with Merrill Lynch related to Banc One's processing of its CMA brokerage accounts. This is the third contract Banc One has had with Merrill Lynch since 1977, when Banc One was selected to be

# Looking for IMS Productivity Tools?

**Take a close look at APS/IMS...**
APS/IMS is the application productivity system that for the first time, offers a strategic solution for IMS DB/DC and CICS/DL1 users.

With APS/IMS, you won't have to settle for a development tool that meets just a few of your productivity requirements. APS/IMS incorporates screen and application "painting," prototyping capabilities, and procedural and macro language support into a single, integrated architecture. With APS/IMS, your development staff can design, prototype and implement batch and online applications in a fraction of the traditional time and cost — without sacrificing performance or functionality.

And APS/IMS won't force your development staff to learn a new language or adopt a new design methodology. APS/IMS is fully compatible with your existing source-level interfaces and generates native-level COBOL source code, without adding any run-time overhead.

**...via the "FAST TRACK" Evaluation**
Your time is important. That's why SAGE has developed an evaluation process that's quick and thorough. In 1-½ days, our "FAST TRACK" will give

cal overview of the APS/IMS product plus a "hands-on" workshop session. You'll meet with our technical support staff, product development managers and corporate executives to gain the complete product knowledge you need to make an informed decision.

So if timing is critical, schedule a "FAST TRACK" session. Just call 800-638-8703 and ask to speak to a "FAST TRACK" Representative.

YES, I am interested in APS/IMS.
☐ Timing is critical. Tell me about FAST TRACK.
☐ Please have a representative contact me.
☐ Please send me information.

*Name* ______________________
*Title* ______________________
*Organization* ______________________
*Address* ______________________
*City* ______________ *State* ________
*Phone* ______________ *Zip* ________

MAIL TO: Marketing Services, SAGE Systems, Inc.
3200 Monroe Street
Rockville, MD 20852
CW

SAGE SYSTEMS INC.
*3200 Monroe Street • Rockville, MD 20852 • 301/231-8686*
**Call 800-638-8703 Today**

*APS is available for users of IMS DB/DC; CICS, DL/I; and CICS/VSAM.*
*APS operates under TSO and CMS or on the IBM PC in a programmer workstation mode.*

the precursor for this revolutionary financial product.

While credit and debit card processing is important to Banc One's overall strategic scheme, it is the centralization of bank processing activities that has enabled the company to make its acquisition program work.

A small bank sees in the Banc One affiliation (read: acquisition) proposition an opportunity to cope with the accelerating changes in financial services that would otherwise engulf it — new regulations, the prospect of interstate banking, interest-rate deregulation and perhaps most critical, new technology demands induced by the convergence of information processing and telecommunications.

For Banc One, its acquisition program — called the "Uncommon Partnership" because it allows the acquired bank a reasonable degree of independence — enables it to reap large economies of scale. Listen to McCoy on this partnership, taken from the 1983 annual report: "More recently, the Uncommon Partnership represents our chosen way of managing the holding company even though we could merge everything into a single bank. Instead, each bank is run by bankers from that area, each trying to be sensitive to community needs. As a result, a lot of our management strength and, certainly, the growth and earnings potential, lies with our affiliates. We have limited the concentration of management to those areas that are most sensitive to economies of scale, such as data processing or the handling of investments. I expect this philosophy will remain for some time into the future."

Thus, Banc One sees the strategic cost thrust to shape its competitive strategy of growth via acquisition. In the case of a recent affiliation, according to another officer at Banc One, "We were able to save almost a million dollars a year in combined operating expenses by converting the affiliates' data processing systems into our single system. There are some real economies of scale at work here."

### Strategic alliance

Banc One also forged an innovative strategic alliance with Comp-U-Card, a computerized shopping and below-retail buying service. The two partners created Super Visa, a credit card issued by Banc One that Comp-U-Card offered as bait to lure new customers.

This strategic information systems alliance serves Comp-U-Card's purpose of enhancing its offering to customers and foregoing the risk and expense associated with starting its own credit card system.

For Banc One, the alliance has already increased the bank's credit card account base by 100%. This has proved to be particularly profitable, because Comp-U-Card's customers have tended to let their accounts roll over to a greater extent than Banc One's other cardholders.

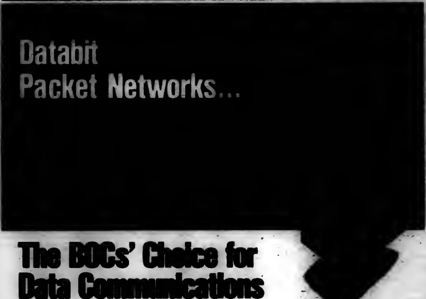
### Creative force

For Dun & Bradstreet, McKesson, and Banc One, strategic information systems vision functions as a creative force transforming the organization through strategic moves supported or shaped by information systems. Other organizations, such as Citibank, Federal Express, McDonnell Douglas Corp., American Hospital Supply Corp. and General Electric Co., also possess strategic vision. Each comprehends, in its fashion, the strategic importance of information systems.

Strategic information systems vision is an ability that can be developed, and hence possessed, in varying degrees. Its most important prerequisite is the adoption of the strategic perspective on information systems. Without this perspective, the systematic search and exploitation of strategic information systems opportunities would be doomed.

The conventional perspective countenances the existence of only two information systems varieties: MIS and management support systems. Companies holding this conventional perspective lack the vision to see the cornucopia of strategic information systems opportunities falling forever beyond their line of sight.

But by adopting the strategic perspective on information systems, by donning a new pair of conceptual glasses, the world of strategic information systems opportunities appears.



The BOCs' Choice for Data Communications

Now, more and more Bell Operating Companies are making Databit their dependable source for today's advanced packet-switching networks. A member of the Siemens family, Databit is part of one of the world's largest electronics companies. Teamed with Siemens, Databit offers the BOCs solutions to the complexities of today's data-communications networks.

Siemens-Databit packet networks provide the BOCs with complete network management, cost-effective network topology, high throughput, and multiple-protocol support; plus the ability to grow and meet their customers' changing needs.

Our packet-switching systems are field-proven, with X.75 connections to over 20 data networks worldwide. And in the U.S., more BOCs have chosen Siemens-Databit packet networks than all our major competitors combined.

Packet Switches, Advanced Network Processors, Data-Voice Multiplexers, and Modems
The network backbone is the EDX-P, a powerful and flexible X.25/X.75 switch for public or internal data networks. With its state-of-the-art Network Nodes and Network Management Center, the EDX-P offers redundant, hot-standby operation; multiple call and data priorities; and billing (including AMA billing).

The access layer of the EDX-P network, our Advanced Network Processor (ANP), supplies the power, versatility, and cost-effectiveness needed for X.25/X.75 packet-network access. The modular and expandible ANP handles up to 128 subscribers, and it supports multiple protocols (including asynchronous, 3270 DSP, X.25, and X.75) and multiple high-speed trunks up to 56/64 kbit/s.

With our modems and data-voice multiplexers, and the extension of our network-control system to all layers of the network, we have become a dependable source for packet networks for the BOCs.

Comprehensive Services
In addition to supplying complete packet networks, we support our customers with a comprehensive array of services, such as network planning, commissioning, and installation, software and hardware engineering, and totally U.S.-based manufacturing facilities.

Join the growing list of BOCs and other telecommunications companies—including New York Telephone, Southern New England Telephone, Wisconsin Bell, Indiana Bell, New England Telephone, NETECH Communications (of U.S. West), and many more—who look to Databit for advanced packet-network systems.

For more information, contact:
Databit Incorporated
110 Ricefield Lane
Hauppauge, NY 11788
or call TOLL FREE in the U.S.:
1-800-DATABIT

Databit A Siemens Company

# COMMUNICATIONS

## Merits of digital links may outweigh expense

By John Dix
CW Staff

Digital communications facilities may be preferable to analog ones, but the economics and lead times associated with digital service are convincing some users with adequate analog networks to stand pat.

The merits of analog and digital facilities were hashed out by telecommunications managers in a session at Telecom '85, the recent International Communications Association meeting in Dallas. As one attendee noted, "If you have a good analog network, you can't cost justify anything else." However, this will change if analog private-line rates increase.

Other than the expense and the amount of time it takes to install digital facilities — depending on the geographical area and the speed of the line needed — digital facilities usually outperform analog lines hands down. Some benefits of digital facilities include the following:

- Many things can affect data transmission over an analog facility, such as circuit degradation because of phase jitter and noise interference such as cross talk. Digital circuits are not subject to the same problems and typically, but less frequently, quit outright instead of fail slowly.
- Because there are fewer things that can go wrong with digital facilities, they are correspondingly easier to troubleshoot. Digital transmission quality can be ascertained using one scope, whereas analog leased lines require use of multiple monitoring tools. This fact foreshortens the time required to train network operators.
- Digital facilities are more reliable and require less maintenance. Uptime of 99.5% or better is not unheard of with digital facilities. No modems are required. Lower

See DIGITAL page 61

## Managers cite integration woes

By Paul Korzeniowski
CW Staff

DALLAS — Managerial rather than technical problems are hindering the acceptance of voice and data integration in many corporations.

That was the view of speakers at a session of the recent International Communications Association annual meeting, Telecom '85.

The audience at the session was asked to name the chief problems that telecommunications managers face. One major problem cited was the murky distinction between data processing and communications functions.

"Data processing personnel are always trying to run the communications side of the house, and communications people are trying to decide how to run data processing," one attendee noted. Most of the approximately 100 session attendees were telecommunications managers.

The tension between the two disciplines was evident in remarks made by speaker Kerry Overlan of United Brands Co. Overlan said, "As voice became digitized [at United Brands], telecommunications functions were incorporated into the data processing department, and a war started," he said. "Data processing managers welcomed communications professionals like IBM welcomed [Digital Equipment Corp.]."

Rather than fighting the change, Overlan recommended that telecommunications managers use it to their advantage. "Today, disciplines are undefined, and there are not clear managerial boundaries," he noted. He listed a number of areas where voice and data processing functions now overlap: Many private branch exchanges

See TELECOM page 61

## MCI unveils packet-switch net service

By John Dix
CW Staff

DALLAS — MCI Communications Corp. officially unveiled a packet-switching service for large users at the International Communications Association's Telecom '85 meeting here and unveiled its virtual network service.

The service, called MCI Datatransport, is aimed at users who spend at least $100,000/mo on data communications, said Bob Yundt, director of data communications services at MCI. The service is being marketed like a private network offering, enabling users to contract for customized services.

MCI network facilities include four Northern Telecom, Inc. SL-10 packet-switching nodes — located in San Francisco, Los Angeles, St. Louis and Washington, D.C. — interconnected with redundant MCI 56K bit/sec. facilities.

Access facilities, service-level agreements and network control are all determined on an individual customer basis, Yundt said.

Terminal and host interfaces available include Level 3 X.25 and support of these protocols: asynchronous communications, IBM 3270 Binary Synchronous Communications, IBM Synchronous Data Link Control and IBM RJE 2780/3780. The user can also customize support for nonstandard protocols like those typical of point-of-sale terminals, Yundt said.

Customer access is provided at 9.6K bit/sec. and 56K bit/sec. over dedicated lines, and dial-up connections to dedicated ports are supported at 1,200 bit/sec. Port sharing for dial-up service will be available in the future, according to Yundt.

Contractual service-level agreements can specify network availability, service restoral guarantees and message delivery times. The user can also contract for added network control where needed, providing customized subnetworks and control over

See MCI page 61

- ITT Telecom has added data switching ability to its line of System 3100L PBXs/66
- DG has unveiled a computer-to-private-branch-exchange interface board for its Eclipse 32-bit computers/66
- Octel Communications recently showed a smaller capacity version of its Aspen voice message system/66
- Canoga Data Systems has announced an 8- to 16-channel, point-to-point multiplexer for synchronous or asynchronous traffic/66

INSIDE

Voice/Data Communications/66

Multiplexers/Modems/66

## Data channel service unit available for AT&T's DDS

SIMI VALLEY, Calif. — Teleprocessing Products, Inc. has announced a combination channel and data service unit for AT&T's Dataphone Digital Service (DDS) that supports IBM's Synchronous Data Link Control protocol.

The TP-502 CSU/DSU digital termination unit is said to provide noninterfering remote diagnostics and network management capability to DDS networks. The company's network management approach, dubbed Multidrop Network Management, reportedly enables diagnostic information to travel on existing DDS links simultaneously with live data.

An IBM Personal Computer XT-based central site diagnostic facility offers the user access to diagnostic and performance characteristics of the network, according to the company.

The TP-502 is priced at $1,795.

The Multidrop Network Management system, to be introduced at user conferences in upcoming weeks, will range upward in price from $35,000, depending on the number of lines supported and management options selected, the vendor said.

Teleprocessing Products has also announced price reductions across its standard line of digital terminal units. List prices on the TP-501 for 2.4K to 9.6K bit/sec. and TP-557 for 56K bit/sec. have been reduced from $1,025 and $1,095 to $650 and $750 respectively.

Teleprocessing Products is located in Building 7K, 4565 E. Industrial St., Simi Valley, Calif. 93063.

## Wang terminal introduced for use with Intecom PBXs

DALLAS — Intecom, Inc. and Wang Laboratories, Inc. announced a terminal made by Wang for use with Intecom's private branch exchange switches.

Originally hinted at back in September at the Telecommunications Association Conference in San Diego, Keystone is the first product to come out of the alliance created when Wang bought 20.5% of the switch manufacturer.

Keystone is a combination telephone and, initially, TTY-type dumb terminal. Through connection to Intecom's IBX PBX, Keystone is said to provide speed dialing, voice messaging and terminal emulation. It has a 128K-byte memory and can communicate with an IBX at 19.2K bit/sec.

According to Intecom, users will be able to connect Keystone with the CPU portion of a Wang Professional Computer, providing access to MS-DOS-based applications.

### Workstation function

When an IBX is connected to a Wang VS computer, Keystone is said to be able to function as a VS workstation capable of accessing Wang Office applications such as electronic mail, messaging, file management and calendaring; however, it does not allow access to VS-based word processing.

Keystone is being offered to existing IBX customers at $2,400 and will be available in the third quarter, Intecom said.

Intecom is located at 601 Intecom Drive, Allen, Texas 75002.

# Uninet net to support IBM protocols

LENEXA, Kan. — Uninet, Inc. has added IBM synchronous protocol support to its packet-switching network.

The service offerings include 3270 Binary Synchronous Communications (BSC) emulation/termination, 3270 Systems Network Architecture/Synchronous Data Link Control (SDLC) emulation/termination service, X.25 cluster controller support, micro-to-mainframe connection capability and X780 support.

The IBM 3270 BSC and SDLC services enable customers to use IBM 3270 series terminals and devices with Uninet and enable personal computers equipped with asynchronous modems to emulate 3270-type devices.

Host connections can be made through packet assembler-disassembler or with IBM's NPSI communications program. The X780 service allows users to operate RJE applications from 2780 and 3780 devices.

The service offerings are scheduled to become available on June 1 in Kansas City, Mo., New York, Chicago and Los Angeles, the vendor said.

Uninet is located at 10951 Lakeview Ave., Lenexa, Kan. 66219.

## VOICE/DATA COMMUNICATIONS

■ **ITT Telecom has added data switching ability to its line of System 3100L private branch exchanges.**

The feature supports simultaneous voice and asynchronous data transmission, the vendor said. System 3100L is said to supply speed and format conversion and automatic data call setup. Devices are supported with RS-232 or RS-422 interfaces.

The System 3100L supports between 40 and 288 lines or ports, and 180 ports are nonblocking. Data can be transmitted at speeds up to 19.2K bit/sec. per port.

System 3100L features station message recording, least-cost routing, direct inward dialing, direct inward system access, intercom, paging and teleconferencing.

The company said that a system with data switch option and terminal adapter devices costs approximately $890 per line.

*ITT Telecom, Business and Consumer Communications Division, 6131 Falls of the Neuse Road, Raleigh, N.C. 27609.*

■ **Nokia-Kinex Corp. has announced a device that enables users to send data over existing twisted-pair telephone wiring.**

The product, ECB-2W, is said to enable users to transmit full-duplex asynchronous or synchronous communications at speeds up to 19.2K bit/sec. over two wires. The phone can be used normally when data is not being transmitted.

The product costs $700 per node.

*Nokia-Kinex, 6950 Bryan Dairy Road, Largo, Fla. 33543.*

■ **Data General Corp. has announced a computer-to-private branch exchange interface board for its Eclipse 32-bit computer systems.**

The DG CPI/24 board adheres to the interface standard developed by Northern Telecom, Inc. and Digital Equipment Corp. and supported by Rolm Corp., Mitel, Inc. and Intecom, Inc. The board enables DG computers to be interfaced to these manufacturers' PBXs through a CPI interface at 1.54M bit/sec.

The CPI/24 board is a single 15-in. intelligent PBX link controller that provides 24 19.2K bit/sec. asynchronous channels. Computers may be installed at distances of up to 1,500 ft from the PBX.

The CPI/24 intelligent PBX link controller board, available immediately, is priced at $6,000.

*DG, 4400 Computer Drive, Westboro, Mass. 01581.*

■ **Octel Communications Corp. has announced a smaller capacity version of its Aspen voice message system.**

Called the Aspen Branch voice message system, the low-end version can be interfaced with any private branch exchange and integrated with Rolm Corp.'s CBX, Northern Telecom, Inc.'s SL-1, Lexar UTX-1001, all Mitel, Inc. switches and Centrex services.

The Aspen Branch system is housed in a cabinet measuring 21 by 16¾ by 12¼ inches.

The price of an Aspen Branch system capable of supporting 50 to 150 users starts at $40,000 for a four-port system with 6.4 hours of message storage. A version of the Mitel-integrated Aspen Branch systems will be sold for $26,000 as a result of an arrangement with Mitel.

Shipments of the Aspen Branch system are scheduled to begin this month, and volume shipments are expected to begin in July.

*Octel, 1841 Zanker Road, San Jose, Calif. 95112.*

■ **GTE Communications Systems Corp. has announced the Translink telecommunications transmission package, said to combine a channel bank with equipment necessary to provide subscriber services.**

According to a spokesman, the primary application of Translink is to connect voice or data telecommunications circuits or program channels from a central office to a customer's location via T1 transmission lines. Translink employees GTE Communication Systems' standard 9004B channel bank, which digitizes 24 or 48 voice channels at 64K bit/sec. for transmission over one and two standard T1 lines.

Translink measures 51 in. high by

Continued on page 60

Do you still think automatic configuration management is "pie in the sky"?

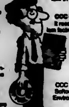
Think again.
It's here. Now. Proven.
Deliverable today!

With Softool's Change and Configuration Control (CCC™) tool, you will be in charge.

CCC Automation:
• management of changes and configurations • control over who makes what type of changes and where • tracking of trouble reports • reconstruction of previous versions • document control • management reports • archiving • and, much more.

CCC is Interactive And Friendly.
It supports all programming languages, and comes with on-line tutorials.

CCC is a Proven Product.
Over 1,000 Softool products are installed worldwide. CCC is supported on the Apollo, DEC VAX, DG MV, Gould S.E.L., Honeywell 6000 series (Level 66, DPS 8/88), HP 3000, IBM 370, 30XX and 43XX computers.



CCC is the Solution for the 80's.
It resolves the most important problem facing the software industry today: configuration management. CCC offers true configuration control...where all components of a given release can be managed as a unit.

There is More.
CCC is a stand-alone component of Softool. An Integrated Programming Environment (PE™) is also available.

Call today for more details or a hands-on demonstration.

Proven in MIL-STD Applications

Softool Corporation
340 South Kellogg Avenue Goleta, CA 93117 (805) 964-0560. Telex: 658334

TSO users
4300 MVS users

Compare These Features:

- Only 256K required
- Edit files of any size (LRECL up to 4096)
- Data set manager
- JES Sysout Previewer (Direct from JES Spool)
- List files (LRECL up to 32760)
- Split screen facility (two fully-active screens)
- Customer-defined exit facility (Controls ALL FSE+ functions)
- Up to 50% less overhead than SPF
- MVS 3.8, SP and XA Support
- Free trial period

Call or Write for Details:
Applied Software, Inc.
840 U.S. Highway #1, Suite 250 • P.O. Box 13027
North Palm Beach, FL 33408 • (305) 626-4818

*Quality Software Since 1973*

© Sperry Corporation, 1984

# The computer system that made mothers' eyes glisten and management faces glow.

A special bouquet of flowers says love in a way that nothing else can.

Ask the more than 1,000,000 mothers who received them from distant sons and daughters through the floral network of Florists' Transworld Delivery (FTD) this Mother's Day.

It was a big job for FTD,® and this sort of peak surge could strain an ordinary computer system to the breaking point. But FTD doesn't use an ordinary system. They use a Sperry 1100 Series central computer, backed by the Mapper System. There is other equipment involved, but Mapper provides for very special applications to handle the very special needs of FTD.

When your flower order is sent via this network, the florist who will be making the delivery has all the information quickly, and in printed form. Eliminating the possibility of error.

You can't expect Florists to become computer experts, and that's why this system was designed to be so easy to use. Non-DP people can master it in a day. And it's all in plain English.

An advantage of Mapper, according to FTD Executive Vice President, William Maas, is that, "Complicated internal analyses and customized management reports can be designed and tested in less than half the time it takes to write a program in COBOL."

The Sperry Mapper System also allows FTD management to provide inventory control and telemarketing to its floral members.

In the words of Bill Maas, "Our task would be far more difficult without Sperry…without the Mapper System."

Mapper. The system that brings joy to mothers and management.

For more information on the MAPPER System or to arrange a demonstration at a Sperry Productivity Center, write: Sperry Corporation, P.O. Box 500, Blue Bell, PA 19424-0024. Or telephone 1-800-547-8362.

SPERRY

FTD and its emblem are registered trademarks of Florists' Transworld Delivery Association. Mapper is a trademark of Sperry Corporation.

Continued from page [illegible]

22 in. wide by 25 in. deep. The package will serve one T1 line, up to 24 channels, using any combination of 9004B channel units, including data ports and program channels. A second T1 line can be added by including another T1 channel service unit, additional common equipment and necessary channel units.

Transtalk, scheduled for third-quarter availability, is priced up to $15,000 for a 2-channel version.

*GTE Communications, 2500 W. Utopia Road, Phoenix, Ariz. 85027.*

■ Siemens Communications Systems, Inc. announced that it will introduce a T1 interface and a Digital Multiplexed Interface (DMI) for its Saturn II and III private branch exchange.

The digital T1 interface will be compatible with industry standard T1 links and DS-1 interfaces and support D2, D3, D4 and the Fe formats. It will reportedly be available in July at prices that have yet to be determined.

The company also said it will develop DMI, an interface that specifies T1 signaling, which was developed by AT&T Information Systems.

*Siemens is located at 186 Wood Ave. S., Iselin, N.J. 08830.*

## Western Union unveils SDNS

SADDLE RIVER, N.J. — Western Union Corp. has announced Software Defined Network Services (SDNS), which is said to have rates roughly 25% lower than its Optimized Wats rates and approximately 50% lower than AT&T Wats rates.

Subject to approval by the Federal Communications Commission, the service is reportedly aimed at large corporations with heavy calling traffic between multiple branch offices. All SDNS lines have access to Western Union's nationwide network, giving users a single trunk group for all voice/data communications.

To create a software-defined network, Optimized Wats users have to provide Western Union with the telephone numbers of their various branch offices to be entered into the SDNS data base. Western Union then assigns individual telephone numbers for each location and extension. This enables users to access branch office dial-up facilities with private dialing plans.

SDNS will initially be available in New York; Chicago; Phoenix; Los Angeles; San Francisco; Detroit; Dallas; Cincinnati; White Plains, N.Y.; Toledo, Ohio; Washington, D.C.; Boston; Houston; and Philadelphia. The maximum discount applies when the customer reaches 60 hours of usage.

SDNS customers who also use Western Union's Easylink electronic mail service, worldwide Telex and/or TWX services, are reportedly eligible for the recently announced joint services discount. This is said to allow SDNS customers to apply 20% of their other Western Union service bills against their SDNS bill to a maximum of $1,000 per month or 10% of their long-distance service bill.

Western Union, One Lake St., Upper Saddle River, N.J. 07458.

## MULTIPLEXERS/ MODEMS

■ Federated Technology & Electronics Corp. (F-TEC) has announced the Model 4848 modem, which operates at 4.8K bit/sec., full duplex and over two-wire leased or dial-up lines.

The 4848 has an echo cancellation feature that weakens echoes by a factor of 60db for full-duplex operation over two-wire dial-up lines, the vendor said. Echo cancellation enables the telephone bandwidth, 300Hz to 3,400Hz, to transmit in both directions simultaneously.

The 4848 provides synchronous operation and offers as an option an asynchronous-to-synchronous converter. The 4848 has an automatic answer/disconnect feature and is available in both stand-alone and rack-mounted models.

The 4848 complies with CCITT V.32, which defines modems operating at 4.8K bit/sec. over two wires and that have fallback speeds of 2,400 bit/sec. or 1,200 bit/sec. The 4848 will also be compatible with the future 9.6K bit/sec., two-wire full-duplex modems when operating in the 4.8K bit/sec. fallback mode.

The model 4848 is priced at $3,500 and is available immediately.

*F-TEC, 15 Seeley Ave., Piscataway, N.J. 08854.*

■ Canoga Data Systems has announced an eight- to 16-channel, point-to-point multiplexer for synchronous or asynchronous traffic that uses a fiber-optic link of up to one mile.

The CMX-816 multiplexer can combine eight or 16 synchronous channels ranging in speed from 2,400 to 76.8K bit/sec. over the fiber, which is being driven at 1.544M bit/sec. In asynchronous applications, the multiplexer can handle channel speeds to 100K bit/sec.

Each channel on the CMX-816 can be clocked externally or can be programmed for its own internal clock rate. The multiplexer can support different synchronous rates and external timing on different channels, the vendor reported.

The eight-channel CMX-816 multiplexer can be expanded to 16 channels and can support an RS-232, V.35 or RS-422 interface for each channel.

The CMX-816 costs $2,750.

*Canoga Data Systems, 21218 Vanowen St., Canoga Park, Calif. 91303.*

Lost Data Means
Than to Others.

## TELECOM

from page 57

digitize analog signals, personal-computer and telephone functions are merging and local-area networks run electronic mail applications.

"All of these products and services are just now evolving, and telecommunications managers are standing at center stage," he added.

The key way for telecommunications managers to gain power is to take charge of the office automation applications. Overian cited the following two reasons for this approach:

■ OA is an area with which most telecommunications managers are familiar.

■ Taking charge will help the manager gain power in the corporation.

"Whoever controls office automation will control a corporation," Overian claimed. "It will be the key corporate application in a few years." To gain this control, a telecommunications professional must establish a relationship with IBM. "IBM will be the prime supplier of office automation applications," Overian predicted.

### Get out and sell

Overian urged attendees to go out and sell themselves and their position to the corporation.

"Today, managers face a tremendous amount of risk," he concluded. "But there is also a tremendous amount of reward. If the telecommunications manager plays his cards right, he could control key applications. If he doesn't, he will be relegated to merely providing the switch that is used for those applications."

## MCI

from page 57

certain applications.

The untariffed service will contain three basic rate elements: access charges for the line facilities used; lease or purchase of access equipment used, such as packet assemblers-disassemblers; and usage rates. Contract terms are flexible, Yundt said, and may be for less than a year, although he expects most users will want the stability offered by long-term contracts.

MCI Datatransport is available now. The Security Pacific National Bank in Los Angeles has reportedly been using the service since last year. Yundt said MCI expects to sign three or four other customers by the end of the year.

MCI also unveiled MCI V Net, a software-defined network service targeted at users with multiple locations and total voice traffic of at least 200,000 min./mo.

MCI V Net is said to enable virtual private networks to be custom designed, providing corporate network access to all company employees from any location, the company reported.

Advantages over other software-controlled networks, according to MCI, is that it supports credit card traffic, enables customers to price services to corporate users differently from how MCI bills it, supports international calling and provides directory assistance for all V Net users.

Security Pacific will also be the first company to use V Net, which is scheduled to be installed in November.

MCI is located at 1133 19th St. N.W., Washington, D.C., 20036.

## DIGITAL

from page 57

digital bit-error rates also reduce the number of retransmissions when compared with analog facilities.

■ When lines are dropped, the mean time to repair digital links is generally far shorter than the time required to troubleshoot analog facilities. One user said the average time to repair an analog line in his network was two days, as opposed to two hours for his digital lines.

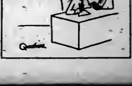
Another obvious advantage of digital links is the ability to support higher data rates. Users hesitate to push anything higher than 9.6K bit/sec. over analog voice-grade leased lines, with many opting for 4.8K bit/sec. because of reliability (the bit-error rates at higher speeds can negate the throughput advantage). The maximum theoretical rate for voice-grade lines — no conditioning — is 16.8K bit/sec. Digital services support rates up to 1.54M bit/sec.

Problems that have cropped up with digital services are usually associated with the multiplexing hardware — particularly in the case of T1 multiplexers for 1.54M bit/sec. facilities — rather than the service line, attendees reported.

Users also voiced concern about the problem of backing up digital links. Putting in redundant facilities is usually too expensive, and dial backup for digital links is offered by only a few vendors (users noted General Datacomm Industries, Inc. in Danbury, Conn.) and is still limited and expensive.

But selling migration to digital facilities to management can be a hard task, given present-day rates, particularly when you are a short way into the depreciation of current modems and other communications hardware used in analog networks.

Some users expect tariffs for leased analog lines to increase and equal digital rates and perhaps surpass them. If this happens, the merits of digital will make it the obvious choice for data networks.


BEHIND EVERY SUCCESSFUL MAN — IS A COMPUTER

More to Some People

As a manager with PC data to archive, you're probably more than a little concerned.

Your neck is on the chopping block.

But it needn't be. A PC Megastore® hard disk/streaming tape subsystem from Ampex can give you safety and convenience no other storage can match.

Why? Three unique differences:

One: The tape's formattable and uses the subsystem's processors to skip over error-causing flaws in disks and tapes. So it won't corrupt files as you move them from tape back to disk.

PC Megastore comes in [illegible] models: 20 MB disk with 25 MB tape, 10 or 20 MB disk and 25 MB tape.

Two: The tape's bootable. So you can access both your operating system and data files directly if a disk fails.

Three: The tape's addressable and uses cache memory to store your file directory. So you can get any backup file you need in under 92 seconds–not the 1 hour, 4 minutes other streamers take.

Even if the file you need is on another PC Megastore subsystem, there's no problem. Tapes are interchangeable. Once you've slipped in the host adapters*–you can move PC Megastore from one kind of computer to another just by moving its plug.

Sound safe and easy? It is. It'll stay that way too. The PC Megastore subsystem is warrantied for a full year by a company known for manufacturing quality computer peripherals for over 30 years: Ampex.

So if you're worried about PC file security, call us at 800 421-6863 (800 821-9473 in California).

We'll help you keep your data–and your head.

AMPEX
Ampex Corporation · One of The Signal Companies

*Host adapters available for IBM-PC, PC-XT, PC compatibles, Apple II and IIe.® PC Megastore is a registered trademark of Ampex Corporation. Ampex Computer Products Division, [illegible], Marketing Communications, [illegible] Broadway, Redwood City CA [illegible]

# The more [illegible] you are about [illegible] the better [illegible]

**T**alk to most so called "networking companies" about point-to-point dial networking and you'll probably get a big song and dance, but very few products.

Codex, on the other hand, offers a complete repertoire of dial modem solutions. To meet any need.

We offer a full line of 2400 bps modems, proven in benchmark studies to be more accurate, more reliable over degraded lines than any other modems on the market.

We offer Bell-compatible and international modems.

We even offer modems that have a sophisticated error-correcting feature.

The fact is, we offer the most complete dial modem line in the industry.

Which means one thing: when you talk to a Codex applications expert you're talking to a person who can be totally objective in recommending products for your environment.

Maybe that's why in a recent industry wide survey we were chosen as the preferred modem supplier.*

Maybe that's why you should be talking to us, too.

Dial **800-426-1212.**
**Ext. 224.** Or write
Codex Corp.
Dept.
707-224,
20 Cabot
Boulevard,
Mansfield
MA 02048.

**codex**
MOTOROLA

*McGraw Hill's "Data Communications" magazine rated us as having the best technology and price/performance.

© Copyright 1985 Codex Corp.

# SYSTEMS & PERIPHERALS

## Data base machine's appeal rising

By Maura McEnaney
CW Staff

Installing a back-end processor dedicated to maintaining a large data base is a concept that is growing quietly among data base users.

During a time when software vendors appear quite secure about their relational data base management systems that give end users direct access to information, integrated hardware and relational DBMS software — known as data base machines — are managing to find a niche of their own.

That niche could get much bigger, according to one user. Michael Cappi, vice-president of systems and technology in Citibank's retail banking division, is sold on the idea of the data base machine. His division purchased two Teradata Corp. DBC/1012 machines about a year ago and uses the dedicated systems for information center operations and more recently for transactions in its branch operations.

"I don't believe software alone can solve the problem of high-performance processing and rich information retrievals," Cappi said. Complex information retrievals are a major concern for one of the the world's largest private banks, which on any given day may want to ask the data base how many of a particular type of certificates of deposit worth more than $10,000 it sold at a particular location. Parallel processors within the data base machine allow the entire data base to be searched at the same time, Cappi said. "I could do a [complicated] retrieval question and get an answer back in five minutes — sometimes even a few seconds. At the same time, I can interrupt it and do some transactions like a balance inquiry," he noted.

Britton-Lee, Inc. data base machine

The machine used at Citibank is from one of two vendors making headway in the data base machine market, according to Shaku Atre, a private consultant specializing in data bases. While Teradata's DBC/1012 data base machine is aimed mostly at large IBM mainframe shops, Britton-Lee, Inc., with a user base of approximately 300, focuses primarily on the mid-range systems, particularly Digital Equipment Corp.'s VAX systems. Britton-Lee has been shipping its product for approximately four years, while Teradata has been shipping its product for about 14 months.

Atre and other industry observers said they believe that for now, data base machines are best suited to users implementing specific applications on huge data bases. Research and development projects are one such area, she said.

"Users today are companies that are doing leading-edge research," according to T. Capers Jones of Software Productivity Research, Inc. in Acton, Mass. "Of the Fortune 500 companies, probably 100 would have the need for a data base machine, and

See DBMS page 70

INSIDE

Data Storage/66

## Library of Congress tests optical disk system

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — The optical disk system being tested at the Library of Congress may someday help the world's largest library to store and preserve its collection of old documents, maps, photos and recordings, as well as enhance retrieval of the materials, officials said at a recent conference here.

The system will not only let the public use VDTs to view such things as ancient maps too fragile to handle but will also give the library's Congressional Research Service (CRS) access to library materials, according to Felix P. Krayeski, section head of CRS office systems.

In a presentation at the Association for Information and Image Management's recent conference here, Krayeski and Alan Linden, senior systems analyst, disclosed that CRS also is studying the feasibility of transmitting CRS reports and library materials from the optical storage system to computer terminals in the offices of U.S. legislators.

Transmission could occur on an installed network of broadband coaxial cable or possibly on phone lines, twisted-pair cable or fiber-optic lines, they said, adding that a report due in June will explore the options.

CRS is a unit of the library whose charter is to provide Congress with unbiased reports on public policy issues, frequently drawing on the library's extensive book and periodicals collections.

The CRS researchers will respond to an estimated 460,000 congressional inquiries this year, Krayeski said, producing 37.5 million pages of information through the existing Xerox Corp. microfiche reprographics system. Out of a staff of 860 people, 13 do nothing but carry papers from the library buildings to legislative offices across the street, he said.

Krayeski and Linden stressed that the optical disk pilot program — which will run through 1986 — is undergoing extensive evaluation by library and CRS users. The library also is building a laboratory to test the archival properties of the optical disks, since preservation of fragile images

See LIBRARY page 66

## Automation seen driving revolution in office functions

By Donna Raimondi
CW Staff

NEW YORK — Office systems are revolutionizing the secretary's job, while managers and professionals are starting to tire of computers.

That was the conclusion of a recent study which contends that office technology decisions are quickly becoming the realm of the MIS/DP manager and not the office manager. The study also aserts that office microcomputers are increasingly being bought at retail stores and that electronic communications in the office is increasing rapidly.

The study, "Techtrends '85: Inside the American Office," published by the Omni Group, Ltd., said the number of secretaries using electronic spreadsheets will double by 1986, from 21% to 41%, while secretarial use of graphics software will leap to 33% from 16%.

A reason secretaries are using computers for more applications is that their bosses are bored with computer use. More than one-third of 201 people — mostly department managers and personnel administrators — in the top 4,000 companies surveyed cited boredom as a critical problem associated with computer use.

References in the report to office computers refer to desktop computers, personal computers, integrated office systems, stand-alone word processors or other equipment generally believed to be of use in the office en-

See [illegible] page 66

## Disaster service enhanced

### DEC expands offerings, increases coverage area

MAYNARD, Mass. — Digital Equipment Corp. has introduced a series of data center recovery services.

The services include the following five components:

■ Recover-All, which provides users with an on-site maintenance service for items not typically covered under conventional maintenance agreements. The service features movement to and from a safe place, repair and replacement of equipment damaged by incidents not covered under service agreements, such as fire, water damage, natural disasters, power failure, theft, burglary and vandalism, DEC said.

■ Reserve, which gives users a computer-ready room known as a shell site that is equipped with power, communications capabilities and climate control when the computer room is not functional, but the user's hardware is working. Equipment replaced under Recover-All would be installed at the shell site, and administrative space at the same site would be available to the customer.

■ Restart, which keeps business operations running at a remote backup facility. The sites include 10 VAX systems configurations and administrative space and 600 communications lines. Customers can use their applications interactively, and if a major area disaster strikes several companies at once, they can be tied into other systems at the seven existing centers around the country. This service is intended to be an emergen-

See RECOVERY page 70

# SOMETIMES YOU NEED MORE
# THE QUESTION IS,

THE MINI TOWER

THE TOWER

Maybe you run a small business. A department of a large business. Or a nationwide network of businesses.

No matter what size business you run, one of the NCR Towers™ above can help you run it better.

Because they all give your people a lot more speed, memory, storage and versatility than personal computers. For a lot less money.

**MORE THAN A PERSONAL COMPUTER IN MORE WAYS THAN ONE.**

The Towers utilize UNIX SYSTEM V* or RM/COS* as their operating system. Which means they're perfect for the sophisticated user who wants to write his own programs, as well as for the beginner who can choose from hundreds of off-the-shelf solutions to his problems.

If your business or department has already invested in IBM or IBM-compatible personal computers (the NCR PC 4, for instance), you can use them as intelligent work stations with any of the Towers.

And, finally, the Towers can all stand alone or be networked together. As well as communicate with other computer systems via SNA, X.25 and other industry standard protocols.

**THEY PERFORM BRILLIANTLY BECAUSE THEY'RE BUILT BRILLIANTLY.**

The Towers are all powered by Motorola microprocessors (the regular Tower by the 68000, the XP and Mini by multiple 68010's).

Other state-of-the-art features include Winchester hard disk and the Intel Multibus.* Not to mention an error-correcting memory

© 1985 NCR Corporation

* UNIX SYSTEM V is a registered trademark of Bell Laboratories. Multibus is a registered trademark of Intel Corporation. RM/COS is a registered trademark of Ryan McFarland Co.

THAN A PERSONAL COMPUTER. HOW MUCH MORE?

THE TOWER XP

and a unique power-failure recovery system that enables all the Towers to survive power outages (thus keeping your data intact).

**PEOPLE WHO NEED MORE THAN A PERSONAL COMPUTER DON'T ALL HAVE THE SAME NEEDS.**

Of course, the Towers do have their differences.

You can choose from 512 kilobytes of memory to eight megabytes. From twenty-five-megabytes of disk storage to 260 megabytes. From a system for one to eight users to a system for up to sixteen users. Starting for as little as $6,995.

But no matter which Tower you choose, you'll choose a computer that's a good deal more than a personal computer. And one which is backed by service from 1,200 offices throughout 120 countries.

Which means that in addition to getting all the computer you need, you'll get all the support you need.

For more information on the NCR Towers, dial us toll-free at 1-800-CALL NCR.

NCR

INNOVATIVE COMPUTER TECHNOLOGY. YOU CAN EXPECT IT FROM NCR.

## DATA STORAGE

**■ Zetaco, Inc. has announced its BMX-3, a disk drive controller that supports a data transfer rate of 2.5M byte/sec. using disk drives attached to Data General Corp.'s Eclipse and MV series minicomputers via the DG Burst multiplexer channel.**

BMX-3 is said to offer full emulation of Data General disk subsystems including Data General's 6122, 6160, 6161, 6214, 6060, 6061 and 6067 subsystems under DG's unmodified AOS/VS, AOS and Rdos operating systems. It supports any mix of up to four Fujitsu America, Inc. HSMD storage module device interfaces and/or storage module device drives, the vendor said.

Electronically erasable programmable read-only memory on the BMX-3 allows the unit to be configured through included Zetaco software.

The parameters of most popular drives are already programmed in, and the user can input the characteristics of new drives with Data General emulations as they become available, the vendor said.

Zetaco also offers cabling for the BMX-3, either for Data General's Federal Communications Commission-compliant chassis or the company's older non-FCC-compliant chassis. External cables for the FCC-compliant chassis cost $400. Non-FCC-compliant chassis do not need additional cables.

The BMX-3 costs $4,500. Quantity discounts are available.

*Zetaco, 6850 Shady Oak Road, Eden Prairie, Minn. 55344.*

## OMNI from page 63

vironment, a spokesman said.

Out of 316 interviews with members of planning committees, administrative services, departmental representatives and MIS managers in Fortune 1,000 companies, 70% of the companies surveyed said MIS is the most influential department for personal computer (as opposed to other office system) purchasing, the report said. MIS is responsible for deciding which software packages will be bought for personal computers in 74% of the firms surveyed.

MIS controls purchasing of office systems in general in 57% of Fortune 1,000 companies, the report said. The next most powerful group is an office automation committee (in 8% of the companies surveyed), but the typical committee is dominated by MIS, the report said.

Corporate personal computer buyers prefer to make their purchases from from retail computer stores, the same segment of the survey showed. Almost half (49%) of the firms surveyed claim to prefer retail stores, while 44% prefer to buy directly from the vendor.

The reasons given for each preference were similar — lower prices, better price breaks, availability, service and support.

Based on 81 interviews with MIS and telecommunications representatives or people in a position to affect the planning and purchasing of communications equipment in Fortune 1,000 companies, electronic communications is increasing rapidly. Local-area networks have been installed in 49% of the corporations surveyed and by next year more than 80% of respondents will have put up networks, even if they are only small pilot projects.

Thirty-six percent of the companies surveyed use private branch exchange-based communications now; 72% of respondents claim they will use PBX-based communications by 1986, the study said.

Sixty-two percent of the companies surveyed already use some form of long-distance electronic messaging, including Telex, the survey said. Only 9% of the companies plan to start using this technology, the study said.

A summary of the survey is available free from the Omni Group at Suite 450, 116 E. 67th St., New York, N.Y. 10022.

## LIBRARY from page 63

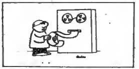
is a major objective of the project, Linden said.

For the analog system, the 12-in. video disks are being mastered by Sony Corp. and generally include color images, such as the motion picture collection, photographs, architectural drawings, maps and cartoons, the CRS officials said.

The digital optical storage system will be used mostly for black-and-white images, such as magazine articles and journals. The system was designed by Integrated Automation, Inc., an Alameda, Calif.-based systems integrator. It includes paper and film scanners, a jukebox-type optical disk drive that uses 12-in. optical disks from Paris-based Thomson CSF, high-resolution monitors and Xerox 2700 and 6700 laser printers.

The pilot project is being watched closely by other government offices and libraries because the digital optical disks store 1G byte of data on a side. Also watching closely is an advisory council from the publishing industry, which is worried about copyright protection for works stored on the optical disks.

"The publishers are watching us like hawks," Linden said, and they have granted permission to store their works for the duration of the pilot program.



"I'll thank you to stop referring to me as 'protoplasm head.' "

SEARCH and you will FIND...
...Even faster than Spot!

Spot's friendly and so is SEARCH...
Spot's smart and so is SEARCH...
Spot finds things that are lost and so does SEARCH...
Spot can be your best friend...
...and SEARCH will be your business' best friend

If the system you use makes it difficult to find information, you need **SEARCH**.

**SEARCH** is the information retrieval software that provides fast, comprehensive searching and display of all types of textual documents — letters, memos, reports, contracts, proposals — from one page to hundreds of pages.

**SEARCH** is the only program that lets you store and retrieve information in its natural state — **original text**. It's easy to use because it stores and retrieves the way you write and think. Your word processing output can be the input to **SEARCH**, eliminating the need to index or tag specific parts of your text for retrieval. **Every word** is stored for searching, even the full text of long, multipage documents.

**SEARCH** was developed by BRS, one of the largest online systems in the world. It's design reflects the experience of thousands of information professionals performing millions of online searches.

Plan to attend the **FREE SEMINAR** on BRS/SEARCH in Washington, D.C. on June 3 & 4.

For more information call Joseph Pitman at (800) 235-1209.

Power...
Flexibility...
Ease of Use.

SEARCH is the ultimate retriever for all your information management needs!

For mainframe, mini and microcomputer systems.

See us at Booth #1263

brs/SEARCH®

"The Ultimate Retriever"

1200 ROUTE 7, LATHAM, NEW YORK 12110 • (800) 235-1209 or in NYS (518) 783-1161

Where can you find a system for information management that is a high-speed LAN, integrates voice and data, uses twisted pair distribution, delivers up to 2.56 Megabits per second to the desk, and has the reliability of a phone system?

When there's business to be done,
business meets on the Meridian.

nt northern telecom

**Uptime**

**Provide 24 hour CICS access**

CICS Dynamic File Allocation is a must for effective CICS scheduling. It is the gateway to non-stop, round-the-clock CICS systems. It eliminates batch update constraints. It guarantees bullet proof restarts. It allows you and your batch jobs to add and remove CICS files at will, without disrupting your user community. Site license $4,000.

**Browse CICS dumps on-line**

The CICS Dump Display Facility provides immediate access to CICS dumps. CDDF is a no-overhead "monitor" for production failures and test system abends. Selective dumps are completely formatted for CRTs and, the dumps can be printed immediately. Site license $3,000.

Netec International, Inc.
P.O. Box [illegible] • Dallas, TX [illegible]
214 [illegible] • Telex [illegible]

## RECOVERY from page 63

cy short-time service. DEC said details of the types of applications to be run at the site would be specified in a vendor-user contract.

- Information Management Consulting/Education Services, which provide help in developing contingency plans.
- Data Protection Service Centers, which store customer media — both DEC and non-DEC — in environmentally controlled vaults. The shell sites and DEC-configured sites are in these centers, the vendor said. All sites will be completed by the end of this summer, DEC said. Each vault can hold 70,000 disk packs or 230,000 tapes, the vendor said.

DEC offers pickup and delivery service seven days a week, and customers within a 50-mile radius of the center can get emergency pickup or delivery within three hours, the vendor said. Centers exist in Boston, Chicago, Los Angeles, Toronto, Dallas, Atlanta and New York. Annual storage fees range from $800 for small businesses to $20,000 for medium to large companies.

Customers can use any or all parts of the recovery service, the vendor said, although Recover-All, Restart and Reserve are for DEC's contract customers only.

A medium-size customer, such as a $125 million business, would pay roughly $35,000 for full services, DEC said. A small business using a minicomputer to control its basic accounts could store its data off-site and buy Recover-All protection for approximately $1,000 per year.

More information is available from DEC, Maynard, Mass. 01754.

## DBMS from page 63

only about 20 or 30 are actively looking at them," he said. Part of the reason for this, he said, is that data base machines are relatively new technology. "I know a number of companies whose stated policy is not to be at the leading edge but to use proven technologies," he said. Imagine a data base machine in a major airline, where hidden bugs damage the data base. The repercussions could be so enormous that companies like airlines want 100% reliable equipment, not necessarily what offers a lot of potential advantages."

For some companies, data base machines are simply too new. "When we established our data base strategies, the data base machine was not in vogue," said Frank Chamberlain, director of corporate data resources at the Hartford Insurance Group. Hartford has been using IBM's hierarchical IMS DBMS for approximately 10 years, Chamberlain said.

Data base machines are not currently manufactured by IBM, which has somewhat hindered their acceptance in the market, according to Damion Rinaldi, a consultant at International Data Corp.

The data base machine was not the best approach at *The Boston Globe*, which purchased a Britton-Lee machine two years ago. According to Dave Pearson, assistant manager of data processing, it was the relational method of storing data and the ability to off-load data bases onto a separate machine that piqued the paper's interest in a data base machine. "We found we just weren't getting the horsepower we needed out of the [Digital Equipment Corp.'s VAX 11/780s]."

While the machine was first purchased for use with decision support system applications, a networking problem prevented the paper from accessing more than three VAXs with the Britton-Lee machine, Pearson said. Prohibitive costs and some support problems caused the *Globe* to use the data base machine for small applications with data requiring few updates, Pearson said.

The expenses of the data base machine are luring the *Globe* away from a full-blown data base machine toward a software solution, Pearson said. "Our [Britton-Lee] IDM configuration ran us close to $250,000," he said. "Every time we put a new VAX into the system, it was costing us $30,000 for the software interface to the host."

R PEOPLE HAV
PERIPHERAL
VISION.

Let DJC open your eyes. A company with only one product line can give you tunnel vision. At DJC, we focus on your needs—not on brand preference. It's a difference we think you'll find quite eye-opening.

DJC expands your horizons. With DJC, you'll see quality peripherals and systems from the leading manufacturers. And while this may make it harder to decide what to buy, we believe it's the only way to come to the right decision. We invite you to choose from integrated voice/data terminals, word processing systems, personal computers, video terminals, modems, protocol converters and printers ...in stock, ready for delivery.

Get the big picture from DJC. Seeing all the possibilities is just the start of the support you get from DJC. Our professional sales people know how to work within your system while keeping an eye on your budget. Plus DJC offers a number of attractive leasing and maintenance agreements. For nationwide sales and service, CALL TOLL FREE today. 800-556-1234 Ext. 235, in California 800-441-2345 Ext. 235.

DJC

The David Jamison Carlyle Corporation

ATLANTA • CHICAGO • DENVER • HOUSTON • KANSAS CITY • LOS ANGELES • NEW YORK/NEW JERSEY • ORANGE COUNTY • ORLANDO • SAN FRANCISCO • WASHINGTON, D.C.

# COMPUTER INDUSTRY

## Renier: IBM not leader in factory

**By Peter Bartolik**
**CW Staff**

BURLINGTON, Mass. — IBM will not dominate the industrial automation market in the same manner that it dominates the mainframe market, the vice-chairman of Honeywell, Inc. predicted last week.

Renier

James J. Renier, who in February was elevated to share the company's chief executive office with Chairman Edson W. Spencer, said IBM would have to undergo "another kind of culture adjustment" if it hoped to repeat its mainframe history in the industrial automation area.

Prior to opening a two-day trade fair here to mark Honeywell's centennial, Renier commented on his company's goals of merging controls and computers with communications to automate factories and offices. In 1984, Honeywell's controls and control products divisions accounted for $2.6 billion of the company's $6 billion revenue; the information systems division, of which Renier had been president prior to the February reorganization, accounted for $1.8 billion of the total revenue.

When he named Renier to the chief executive office, Spencer said the reorganization would enable Renier "to manage the integration of our computer and controls businesses. ... Information systems will be a central part of the company's plans to provide integrated systems using computer, communications and controls for key industrial, commercial building and government markets."

Renier said Honeywell is well positioned to assert a presence in those markets based on its strength in systems inte-

See RENIER page 91

## O. P. M. Leasing stock bid awaits court OK

**By Charles Babcock**
**CW New York Bureau**

NEW YORK — A purchaser has been found for the stock of what used to be one of the nation's largest computer leasing firms, O. P. M. Leasing Services, Inc. of Greenwich, Conn., currently undergoing bankruptcy proceedings under Chapter 11 of the Federal Bankruptcy Act.

The court-appointed trustee in the case, James P. Hassett, has been granted a May 28 hearing to propose that a U.S. affiliate of the British firm Mercantile House Holdings in London buy O. P. M. Leasing's common stock for $7 million.

An additional 90,000 shares of preferred stock would be distributed to creditors, and 10,000 shares of preferred stock would be retained for the management of the new company. The preferred stock would have a total value of $5.6 million under the proposed stock purchase agreement, said Hassett's attorney, Menachem Zelmanovitz of New York.

"The company is going to continue in business," he said.

The previous owners of O. P. M. Leasing were convicted of fraudulent financing amounting to $225 million by borrowing money to finance nonexistent leasing transactions. Former owners Mordecai Weissman and Myron S. Goodman were sentenced to 10 and 12 years in prison, respectively, after pleading guilty to fraud charges.

About $60 million would be available from the company to pay off creditors, and $47 million in tangible assets, including computer equipment for lease, would remain with the business under the new owners, Zelmanovitz said.

Mercantile House U.S. Holdings, Inc., the parent company's affiliate, is not yet the stock's approved bidder. Other parties may still bid until the court acts on the trustee's application, Zelmanovitz said.

- British Telecom announced plans to acquire 51% of Canada's Mitel/72
- Paradyne's chief executive said the SEC's pending multimillion-dollar lawsuit against the company hasn't hurt sales/76
- Convergent Technologies will idle a manufacturing facility for one week in June, sending its production workers on a mandatory vacation/83

## Tandon moves to counter slump

**By Kathleen Burton**
**CW West Coast Bureau**

SAN FRANCISCO — Tandon Corp. plans to broaden both its customer base and product portfolio in an effort to reverse a recent drop in its sales, even if that means turning down business from IBM.

Only a year ago, Big Blue accounted for 58% of Tandon's total sales, making it the smaller firm's largest customer by far. Today, IBM's share of Tandon's revenue has shrunk to 15%, and the figure is unlikely to exceed 20% through 1987, according to company President Sirjan Lal Tandon.

The vast majority of Tandon's business during the next two years will come from new, non-IBM sources. But with a possible shakeout looming on the horizon, "our problem now is to find healthy new customers," Tandon said recently at a Hambrecht & Quist Technology Conference.

A few days after the conference, the company posted second-quarter revenue of $61.1 million, compared with $105.7 million a year earlier. Losses for the recent quarter totaled $19.9 million, compared with profits of $10.4 million a year earlier.

At the conference, Tandon said his company will increasingly diversify its product line and revenue base by expanding into rigid disk drives, systems and subsystems for private-label sale by computer manufacturers.

Last year, flexible disk drives accounted for 80% of Tandon's revenue, rigid disk drives for 8% and systems and subsystems for 7%. In 1985, this mix will shift, with personal computers constituting 25% of Tandon's sales, rigid disks approximately

See TANDON page 90

## No relief for chip industry

**INDUSTRY INSIGHT**
Peter Bartolik
CW Senior Editor

There's no rest for the weary in the depressed semiconductor industry, according to the latest figures released by the Semiconductor Industry Association (SIA).

The SIA reported last week that average monthly orders for the three-month period ended in April were down 7.5% from the figure for the three-month period ended in March. According to the SIA, March is a traditionally high month for orders, and April orders slumped 27% from the high point.

SIA President Thomas D. Hinkelman said recent U.S. Department of Commerce figures for computers and office equipment orders indicate that semiconductor orders should increase by the third quarter. However, he said, the SIA now projects that U.S. market billings, or shipped orders, for 1985 will be down 20% from 1984.

"The lackluster April orders picture is a result of continued declines in the shipping rates for computers and office equipment, causing these manufacturers to postpone semiconductor orders," Hinkelman said.

If the chip industry problems continue to be reflected in depressed stock market prices, some securities analysts who continued to predict forthcoming recoveries

See INDUSTRY page 91

## Export regulations eased

**By Clinton Wilder**
**CW Staff**

WASHINGTON, D.C. — Computer industry representatives have hailed the U.S. Department of Commerce's lifting of software export regulations as the removal of a major barrier to international high-technology trade.

The Commerce Department announced April 29 that it had rescinded its Dec. 31 regulations that, in the opinion of industry spokesmen, would have required government approval for virtually all software exports. The announcement climaxed an intense four-month lobbying effort by the Association of Data Processing Service Organizations, Inc. (Adapso), the Computer and Business Equipment Manufacturers Association (Cbema) and other organizations.

"We are really pleased," said Adapso Assistant General Counsel Dave Wormser. "Our big complaint [with the Dec. 31 regulations] was that [the Commerce Department] imposed unilateral restrictions on software exports. This decision avoids unnecessary harm to our economic security while at the same time protecting our national military security."

The December regulations would have required a validated Commerce Department license for the export of 27 categories of software that previously required such a license only for sale to Soviet bloc nations. The April 29 decision reverts the regulations to their prior status and eases restrictions on export of software not specifically listed by the Commerce Department to all nations except Cuba, Cambodia, Libya, North Korea and Vietnam.

"Before this decision, [the Com-

See EXPORTS page 91

# Are expert systems more trouble than they are worth?

**OUTSIDE LINES**
L. J. Kutten

Recently, *Computerworld* has had a number of articles describing how expert systems software will revolutionize the way Americans do business. These programs will bring the knowledge of experts to everyday people. No longer must an expert be consulted to solve a difficult problem.

This got me wondering — what is an "expert"?

After some thinking, I concluded that experts are people who are liable for their mistakes. They know when the standard rules apply and when they do not apply; their expertise allows them to go to the core of a problem instead of wasting time on the peripheral problems.

**A system only as good as its user?**

This raised another question: What good is an expert system if the person using it does not have the ability to tell whether the system is operating correctly? The user could end up relying on incorrect advice. Take the following example:

You buy an expert system to write a will. Unbeknownst to you, your factual situation is so unique that the standard will-writing methodology used 99.99% of the time is not applicable. Nevertheless, the will is written; six months later you die. Your heirs attempt to probate the will, and they learn the will is void.

If a lawyer relied on an incorrect expert system, that lawyer theoretically has the skill and knowledge to recognize this error and correct it. Using this incorrect system and failing to catch the error makes the lawyer liable for malpractice.

But what happens when nonlawyers uses this system? Will they have the skill or knowledge to recognize that something is wrong? I doubt it. In such a circumstance, there are only two ways to ascertain the will's validity — hire an attorney to review it before using it or die and let a court examine it.

Neither is a very good choice. Hiring the lawyer to review the will can cost more than hiring one to write it originally. Dying to determine the will's validity defeats the purpose of using the expert system.

Similar problems exist in other areas. For example, people use income tax preparation programs to prepare their taxes. I have seen many people take a home office deduction who were not eligible. Nine months later, the Internal Revenue Service inevitably caught up with them, and they had to pay some more taxes, plus interest and penalties.

The expert system they used did not tell them they were ineligible. But had they gone to H & R Block, Inc. or any other tax preparation service, the odds are the human tax preparer would have cautioned them.

So where does this lead? I wish I knew. But before everybody rushes off to this new savior, they should stop and ask themselves one question: "What is my recourse if the advice I receive from the expert system is bad?"

---

*Kutten is a writer specializing in computer law topics and a member of the Illinois and Missouri bars. His book,* Computer Buyer's Protection Guide, *was published last year by Prentice-Hall, Inc.*

---

# British Telecom takes over Mitel

KANATA, Ontario — British Telecommunications PLC, the UK's major telecommunications company, will acquire 51% control of Mitel Corp., it was announced here recently.

Mitel, a telecommunications equipment manufacturer headquartered here, will sell British Telecom treasury shares worth more than $300 million (Canadian) if approved by Mitel shareholders, regulatory authorities and British Telecom's board of directors.

British Telecom was formerly controlled by the British government until last November, when the government sold off its 50.2% holdings under its privatization program.

In a prepared statement, British Telecom's chairman, Sir George Jefferson, said, "We intend to build on Mitel's management and research and development resources in countries where it now operates."

Mitel was an early leader in the sale of small digitized private branch exchanges and was once believed to be an acquisition candidate for IBM, until IBM broke off joint development arrangements in favor of acquiring an equity interest in Rolm Corp.

Mitel suffered through five consecutive losing quarters before showing a profit of $64,000 for the quarter ended Feb. 22.

The company posted revenue of $107.6 million for that quarter, just slightly under that of the year-earlier period.

**Realia COBOL.
Migration without migraines.**

Until recently, you had to abandon the business computer language when you developed microcomputer application software. The available micro COBOLs were inadequate—too limited, too slow. The best alternative—the XT/370 or AT/370 using IBM's COBOL—was very expensive and still too slow. To get acceptable performance, you had to retrain your programmers in Pascal or C.

**Realia COBOL is the cure for such headaches.**

Realia's compiler supports most IBM VS/COBOL and VS/COBOL II features, such as:
- COMP and COMP-3 data
- SELECT assignment names
- Multiple entry points
- GOBACK, EJECT, and SKIP statements
- Structured programming extensions of VS/COBOL II

You can download mainframe systems for development, maintenance, and testing. Productivity will soar.

You can compile faster with Realia COBOL than in most mainframe environments, even on floppy-based systems. Compile-time options allow cross-reference, brief and full code listings, and helpful features like subscript and decimal value checks.

Our interactive debugger lets you follow the program source, display and modify data, and set breakpoints using the normal optimized machine code.

**The results are startling.**

Our users report that their systems run up to 20 times faster when compiled by Realia COBOL. That's compared to our nearest micro competitor. The ratio is up to 100 times faster when compared to any of the others.

On the IBM PC AT, your programs can run at 370/148 to 370/158 speed. Realia's file system really makes your machine deliver, giving it a distinct edge over Pascal or C. Our indexed file system even has full key compression and buffer controls just like VSAM. The generated code is pure MS-DOS, so it can be run on most of the 8088/8086 machine family.

**And you can sell your programs without paying us a royalty fee.**

Realia COBOL is priced at $995, including one year of maintenance and upgrades. Subsequent maintenance and upgrade contracts are currently priced at $125/year/copy. Available for the IBM PC, PC XT, 3270 PC, PC AT, PC-compatibles, and the TANDY 2000.

**Realia COBOL. What a relief.**

IBM, IBM PC, PC XT, 3270 PC, XT/370, PC AT, and AT/370 are registered trademarks of International Business Machines Corporation. MS-DOS is a registered trademark of Microsoft Corporation.

**Professional Software
for the Personal Computer**

REALIA INC.
10 South Riverside Plaza
Chicago, Illinois 60606
(312) 346-0642

Now, Zenith Data Systems Introduces An Entire Line Of Terminals Complete With FCC Class B Approval And Free 90-Day On-Site Service.*

Please send me the FREE Zenith Product Information Kit(s) I have requested below. I understand that a Zenith Data Systems representative will contact me shortly after I receive my Kit(s), but that I am under no obligation to purchase. Or, call Toll Free 1-800-842-9000, Ext. 1.

Your Name (Please Print) Title
Business Name
(AC )
Business Address Business Telephone
City State Zip Code
X
Your Signature

*At most locations in the United States.
Please allow two to four weeks for delivery.

Please check if you are interested in:
- ☐ Zenith General Purpose ASCII Terminals
- ☐ Zenith DEC-Compatible (ANSI 3.64) Terminals
- ☐ Zenith Z-100 PC's and Monitors

Please check if you are:
- ☐ An End User
- ☐ An O.E.M./V.A.R.
- ☐ A Dealer

Zenith data systems

CW

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY CARD**

FIRST CLASS PERMIT NO. 87 MT. PROSPECT, IL

POSTAGE WILL BE PAID BY ADDRESSEE

ZENITH | data systems

**P.O. Box 7618**
**Mount Prospect, IL 60056**

ZENITH

# Paradyne holds customers despite lawsuit

By Kathleen Burton
CW West Coast Bureau

SAN FRANCISCO — Paradyne Corp.'s sales and daily operations have been unaffected by its involvement in a highly publicized lawsuit, according to Robert S. Wiggins, chairman, president and chief executive officer.

The suit, instigated by a Securities and Exchange Commission investigation in 1983, accuses the Largo, Fla.-based communications vendor of violating federal procurement policies in winning a $118 million contract from the Social Security Administration (SSA).

The 1981 contract called for the establishment of a nationwide communications network encompassing 1,850 SSA terminals [CW, March 18].

## Customers returning

Despite the suit, returning customers accounted for 90% of Paradyne's business in 1984, Wiggins said last week at a Hambrecht & Quist Technology Conference here. In 1983, the figure was reportedly 85%.

"The case has not driven old or new customers away to our knowledge," Wiggins said during an interview. "If they're not buying [from us] for that reason, then they're not telling us that."

This year, Paradyne will win 1,200 large accounts, each worth at least $25,000, he predicted.

Wiggins' upbeat assessment comes at a time of sharply reduced quarterly earnings for Paradyne. In the first quarter ended March 31, the company's profits totaled $151,000 on revenue of more than $68 million. During the same period in 1984, Paradyne earned nearly $3 million on sales of $60 million.

According to Wiggins, the lowered earnings were a result of delays in several planned customer shipments.

Although he declined to identify which customers or products were affected by the delays, he did say the deliveries had been rescheduled for the third quarter.

"This quarter's drop [in profits] is just a wrinkle and has nothing whatever to do with the pending litigation," Wiggins said.

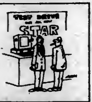
Wiggins

# EDS doubles first-quarter profits

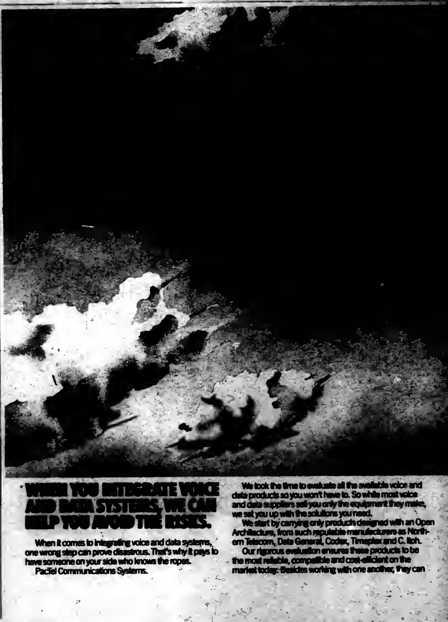
DALLAS — Electronic Data Systems Corp. (EDS), acquired by General Motors Corp. last October as a wholly owned subsidiary, recently announced that revenue for the first quarter more than tripled over year-earlier results, with profits more than doubling.

EDS reported that revenue from GM and its subsidiaries accounted for $449.2 million of the firm's 1984 revenue. Revenue from non-GM clients was $231.6 million, compared with $190.2 million a year earlier.

Profits for EDS in the first quarter were $38 million, or $1.26 per share of GM Class E stock, compared with $18.1 million a year earlier.



"I'm afraid we're not the dealership that offers a free digital watch with every test drive."



WHEN YOU INTEGRATE VOICE AND DATA SYSTEMS, WE CAN HELP YOU AVOID THE RISKS.

When it comes to integrating voice and data systems, one wrong step can prove disastrous. That's why it pays to have someone on your side who knows the ropes.

PacTel Communications Systems.

We took the time to evaluate all the available voice and data products so you won't have to. So while most voice and data suppliers sell you only the equipment they make, we set you up with the solutions you need.

We start by carrying only products designed with an Open Architecture, from such reputable manufacturers as Northern Telecom, Data General, Codex, Timeplex and C. Itoh.

Our rigorous evaluation ensures these products to be the most reliable, compatible and cost-efficient on the market today. Besides working with one another, they can

# H & R Block spurns bid to buy subsidiary

KANSAS CITY, Mo. — The board of directors of H & R Block, Inc. voted recently to reject an offer from the former head of its CompuServe, Inc. subsidiary to buy CompuServe for $72.5 million.

Jeffrey M. Wilkins, CompuServe's former chairman and chief executive officer, was fired from his position by H & R Block last month.

Wilkins organized a group of investors in Ohio, CompuServe's home state, to buy back the computer services subsidiary, but the H & R Block board formally turned him down at a regularly scheduled board meeting May 8. Following the vote, Wilkins resigned from the parent company's board.

"Our conclusion has been and continues to be that it would not be in the best interests of our company . . . to divest ourselves of CompuServe, which continues to play a key role in our strategy for corporate growth and profitability," said Henry W. Bloch, president and chief executive officer of H & R Block.

Wilkins had made offers to buy smaller parts of CompuServe in the last six months. H & R Block consultants had advised against divesting any amount of CompuServe, Bloch said.

Charles W. McCall, CompuServe president and chief operating officer, was named chief executive officer. The rest of CompuServe's top management will remain.

# CDC buys part of DP service firm

SAN FRANCISCO — Bankamerica Corp. announced recently that it has agreed to sell the California operations of its Decimus Data Services Corp. to Control Data Corp. for an undisclosed amount of cash.

Decimus is a contract DP service company specializing in time-sharing services for small and medium-size banks.

The sale was the latest in a series of moves by Bankamerica to divest its DP businesses and concentrate on banking operations. Last month, Bankamerica sold Decimus' computer leasing operation to General Electric Credit Corp.

A CDC official said the acquisition represented a key strategic move for the Minneapolis-based firm, which is a vendor of high-end computer systems and time-sharing DP services.

"It provides us with a strong West Coast market for our rapidly expanding financial industry services," said David P. White, president of CDC's Business Services division.

# Miniscribe reports loss

LONGMONT, Colo. — Miniscribe Corp. recently announced a loss of $12.5 million, or 67 cents per share, in the first quarter of 1985. The company's revenue for the three months ended March 31 was $23.8 million, 30% lower than the $33.9 million reported in the year-earlier quarter. In the first quarter of 1984, the company reported a profit of $1.3 million, or 7 cents per share.

A spokesman for the microcomputer disk drive manufacturer attributed the first-quarter loss, like those of the previous quarters, to the cost of transferring production operations from Colorado to Singapore and Hong Kong. The spokesman also cited the costs of introducing Miniscribe's 5¼-in. and 3½-in. disk drive product lines.

The company also announced formal completion of its previously announced $20 million venture capital financing agreement with a group led by Hambrecht & Quist, a San Francisco-based investment firm [CW, May 6].

Gower said the transfer of disk drive production to the Far East would reduce Miniscribe's manufacturing costs by 30%.

also be integrated with most of the stand alone PCs, word processors and local area networks your office already uses. And with most of the new automation equipment you'll use in the future.

And when it comes to support, we won't leave you hanging. Whether you need something as simple as a few modems or as complex as a totally integrated digital voice and data system, we'll have it up and running in no time. And we'll back it up with our exclusive High Performance Service.™

So if you're up in the air about integrating voice and data, remember the voice and data supplier that can get you there one step at a time.

CALL PACTEL AT 800-556-2020, EXT. 855.

THE SIMPLE SOLUTION.

PAC TEL
Communications Systems

SPSS inc.

# Datamart targets summer for opening DP showrooms

By Maura McEnaney
CW Staff

SAN FRANCISCO — Hoping to shake off the jinx of Boston's Boscom computer industry trade mart, Datamart is scheduled to open its doors late this summer.

The $60 million project from the Bay West Development Co. will be built in two phases near Showplace Square here. Carrying a $31 million price tag, Datamart's first phase will offer 175,000 sq ft to house approximately 50 year-round showrooms for computer-related companies. The second phase, slated for a 1986 construction start, will include 300,000 sq ft of space for 150 showrooms. The project is being financed by BA Mortgage Co., a subsidiary of Bank of America National Trust & Savings Association.

Although to date only 10% of the first phase has been leased, Datamart President Richard Crouch said that the Datamart concept can work, despite the problems with Boscom [CW, April 29]. He said Datamart wants to fill in where retailers left off, attracting visitors whose companies are not frequently targeted by direct sales forces. "We want to provide a method for the manufacturer to sell directly and leverage its resources toward a large number of people," he said.

## Boscom too early

Datamart predecessors like Boscom were too quick to come up with a retail solution missed by retailers and direct sales forces, according to Crouch. "Boscom was too early a solution to the problem before the problem was recognized," he said.

Crouch said he expects Datamart to benefit from Dallas' Infomart, which opened earlier this year [CW, Jan. 28]. "Boscom and Infomart were mad dashing to capture the market," he said, attracting top billings like IBM and Xerox Corp.

However, it could be some time before large companies find their way to Datamart, because they are new to the mart concept, Crouch said. Some companies overestimated the amount of space they needed in Dallas, according to Crouch, who said he believes the big commitments will start rolling in by the first quarter of 1986. "IBM isn't going to sign a lease with us until they know how much square footage they need," he said.

## Seeking 100,000 visitors

While Datamart continues its leasing efforts and its attempts to attract 100,000 visitors annually, Datamart officials said they will launch the center this fall with a variety of conferences for vertical markets. The first conference, slated for Sept. 16-18, will be "Computers in Finance." Other conferences will focus on applications for high-tech and health care industries.

One of the companies taking a wait-and-see approach to the Datamart concept is Access Technology, Inc., which manufactures an integrated spreadsheet for a range of machines. The company signed a letter of intent to lease space at Datamart. "We happen to be looking for more exposure on the West Coast, and we're waiting to see what other companies [Datamart] can persuade," Access Technology President Allan Kluchman, said. While waiting for a field of participants, now limited to Epson America, Inc. and Molecular Computer, Inc., Kluchman is mulling over the types of services provided by the Datamart staff. Supplying a Datamart staff member at the booth site to demonstrate software products might be one way to make the participation cost-effective for his company, Kluchman said.

Despite its prominence in the micro market, Apple Computer, Inc. has yet to participate in computer marts of any sort, according to company spokeswoman Renee Rodrigues. Somewhat more hesitant than Access Technology, Apple is interested in seeing some results before it commits to leasing space, she said.

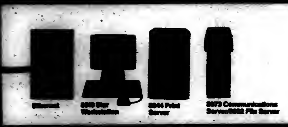
## Study on trade marts

Crouch is not alone in his belief that a computer mart can succeed. Bill Meserve, senior management consultant at Arthur D. Little, Inc., wrote the study on computer industry trade marts for Fidelity Investments, backers of the Boscom project. Meserve also testified before the Zoning Commission in Washington, D.C., in favor of building a 1.5 million sq-ft Techworld trade mart across from the Washington Convention Center. "I am a believer that there is a market requirement for this type of facility," he said.

Trade marts will be regional in nature, Meserve said. "Each region has its unique attributes for drawing significant numbers to make that particular trade mart viable," he said. But success with a concept like a computer trade mart will not come without attracting big names, according to Meserve. "You need a threshold. If you don't get a threshold, you run a substantial risk," he said.

Meserve has a four-prong formula for trade mart success. First, he said, it must be the site and not the vendors that attracts customers. Second, the building must be convenient for those coming to the show. Third, developers must provide the right facilities to support tenants, and last, developers must promote the mart.

Send Me a 1985 Computer Catalog!
[illegible]
NAME
COMPANY
ADDRESS
CITY
STATE ZIP
PHONE


Ethernet
8010 Star Workstation
8044 Print Server
8073 Communications Server/8032 File Server

Matt's office has been winning a lot of new business lately. And it's really not much of a secret.

Because he and his co-workers have been able to make more efficient use of their resources. How? Well, Matt brought in Team Xerox.

Which includes Xerox 8010 Star

"I heard you underbid us by half a million. What's your secret?"

Workstations, high speed laser printers, file servers for organizing and storing data and communications servers for accessing mainframe data bases, all linked together with a Xerox Communications Network. For complex analytical tasks, Xerox also included a Xerox Artificial Intelligence System.

So Matt (and the people in his domestic and international offices) could create, access, share and react to information more quickly and more easily than ever before.

And since Matt's office has become so much more productive, he was able to cut costs—and enter a bid that was $500,000 less than anyone else's.

To make Matt's secret yours, call Team Xerox at 1-800-833-2323, ext. 42 or send your business card to Xerox Corp., Dept. 42013, P.O. Box 24, Rochester, NY 14292.

# ONCE KNIGHT-RIDDER CHOSE AT&T THE FINANCIAL PICTURE LOOKED BRIGHTER.

In the demanding world of financial markets, everything depends on getting the right information. Fast.

For over 30 years, America's leading futures dealers have relied on Knight-Ridder's Commodity News Services. Now, Knight-Ridder is introducing a new service and they're relying on AT&T.

Only AT&T could provide the complete system Knight-Ridder needed for MoneyCenter, one of the most comprehensive financial market information systems ever developed. The system features personal computers, printers, local area networks, and custom-tailored modems. All supported by an unparalleled national service organization.

For traders, just a few seconds can mean millions of dollars in either profit or loss. Knight-Ridder chose the AT&T PC 6300 because of its incredible speed. And also because its high resolution screen is easy on the eyes.

As Knight-Ridder's services expand, their AT&T system can too. Our unique open architecture assures that any AT&T system is flexible enough to meet changing needs and permits our products to work with other vendors' products as well.

To find out why an AT&T system is the right choice for your business, call AT&T Information Systems at 1-800-247-1212, Ext. 535.

AT&T
The right choice.

© [illegible] AT&T Information Systems

## NICKELS AND DIMES

**Decision Data Computer Corp.** reported a 31% increase in revenue for the first quarter ended Feb. 28. Revenue was $43 million, compared with $32.9 million last year. Profits were $2.5 million, or 32 cents per share, compared with $1.6 million, or 21 cents per share, in the corresponding period one year ago.

■

**Monolithic Memories, Inc.** said profits for the second quarter ended March 17 were $3.5 million, or 18 cents per share, compared with $5.5 million, or 29 cents per share, in the like quarter last year. Revenue was $42.7 million, compared with $40.1 million for the like period last year.

■

**American Software, Inc.** reported revenue for the third quarter of fiscal 1985 was $8 million, up 29% from $6.2 million in the same period last fiscal year. Profits increased to $1.7 million, or 30 cents per share, up 21% from $1.4 million, or 33 cents per share, a year ago.

■

**Keane, Inc.** reported revenue for the quarter ended Dec. 31 of $9.1 million, up 51% compared with $6 million in the previous year. Profits were $214,000, or 24 cents per share, up from $10,000, or 1 cent per share, during the same three-month period a year ago.

■

**Hadco Corp.** announced revenue for the first quarter ended Jan. 26 of $24.4 million, compared with $29.3 million for the same quarter one year earlier. A net loss of $2.7 million, or 30 cents per share, was reported, compared with a net profit of $1.8 million, or 17 cents per share, the year earlier.

■

**Xebec Corp.**'s revenue for the first quarter of fiscal 1985, ended Dec. 31, increased 27% to $41.5 million from $32.7 million a year ago. Profits were $80,000, or 1 cent per share, compared with $3.1 million, or 24 cents per share, in the prior year.

■

**Analog Devices, Inc.** announced revenue of $82 million for the first quarter ended Feb. 2, compared with $69.5 million one year earlier. Profits were $9.3 million, compared with $7.7 million in the like quarter last year.

■

**Mohawk Data Sciences Corp.** reported a loss for the third quarter ended Jan. 31 of $15.4 million, or $1.04 per share, compared with a profit of $547,000, or 4 cents per share, for the same period last year. Revenue was $85.3 million, compared with $106.6 million in the same quarter one year earlier.

■

**Televideo Systems, Inc.** reported revenue for the first fiscal quarter ended Jan. 31 of $26.7 million, compared with $43.2 million in the like quarter a year ago — a 38% decrease. The company had a net loss of $8 million, compared with $5.7 million in the same quarter last year.

■

**CSP, Inc.** announced revenue for the second quarter ended Feb. 28 of $3.6 million, up 70% from $2.1 million in the corresponding period last year. Profits were $490,000, compared with $127,000 in the prior year's quarter.

■

**Micron Technology, Inc.** announced revenue of $18.2 million for the second quarter of fiscal 1985, ended Feb. 27, compared with $12.3 million for the same quarter last year. Profits were $2.8 million, compared with $2.9 million in the like period one year earlier.

■

**Softech, Inc.** reported revenue of $9 million for the third quarter ended March 1, compared with $10.9 million in the same quarter last year. Profits were $105,000, compared with $381,000 in the comparable period one year ago.

# Convergent to halt CT production for week

SAN JOSE, Calif. — Convergent Technologies, Inc. will halt production at its CT Division here for one week in June as a cost-cutting measure, the company acknowledged last week.

A Convergent spokesman cited softness in orders for Convergent's CT mini and microcomputer products, which are sold to large OEMs such as NCR Corp. and Burroughs Corp. for resale.

An estimated 400 to 600 production employees in the division will be required to take vacation time during the first week of June.

In related developments, Convergent President and Chief Executive Officer Paul C. Ely Jr. said all employees would forego taking accrued personal time for the next three months. He also said employees exempted from the mandatory vacation have been asked to work extended hours and that the company would shift approximately 300 production personnel from the CT Division to the Special Products Division, also based here.

The Special Products Division manufactures the Unix PC 7300 for AT&T, and Ely said demand for that product has exceeded the company's expectations.

In discussing the slackened demand for CT products, Ely cited a recent decision by Burroughs to manufacture a large percentage of its present CT product needs under its own license.

Although Burroughs has been Convergent's largest customer, Convergent spokesman William Bennett said AT&T is about to, or already has, stepped into that position.

The Solution

Dial-Up 3270

**LineMaster** An intelligent device for dial-in access to your mainframe 3270 Bisync line. **LineMaster** is a communications watchdog which keeps a line in service until a user dials in.

- For any remote 3271/4/6 line—up to 19.2K baud
- Compatible with any 3270 BiSync emulator including microcomputers
- Connects between modem and mainframe.
- Installs in minutes

$795.

**Mainframe, Inc.**
205 Livingston Avenue
New Brunswick NJ 08901
(201) 828-4499

LEARN CICS THIS SUMMER

| COURSE | JULY | AUG. | SEPT. |
|---|---|---|---|
| APPLICATION DESIGN | 7/22–26 CHI | | 9/3–6 NY |
| COMMAND LEVEL PROGRAMMING | 7/15–19 NY<br>7/22–26 DA | 8/19–23 NY<br>8/10–11<br>& 17–18 NY | 9/23–27 NY<br>9/16–20 CHI |
| DEBUGGING | 7/15–19 NY | | 9/3–6 NY |
| MACRO LEVEL PROGRAMMING | | | 10/7–10 NY<br>10/21–25 CHI |
| INTERNAL ARCHITECTURE | 7/8–12 NY | 8/10–11 &<br>17–18 NY | 9/9–13 NY |
| PERFORMANCE DESIGN | 7/1–2 NY | | |
| RECOVERY & RESTART | | 8/26–27 NY | |

Not all CICS courses are alike. Only SysEd prepares reference manuals full of real life sample programs and case studies—the kind you'll need and use long after you've taken the course. Only SysEd has fully equipped Computer Labs where you'll spend hours in workshop sessions actually programming CICS on our 3081 computer using 3270's dedicated to the class. Classes are held in New York City, Chicago, Los Angeles and San Francisco. SysEd course offerings are also available for on-site sessions at company installations. On-site courses can include the same case studies and hands-on approach as our public courses, or can be customized to your particular application or project. To get ahead this summer, call Steven Scott (212) 564-8147/48/49.

SYS-ED

35 WEST 39th ST., NEW YORK, N.Y. 10001 • (212) 564-8147/48/49

UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK

In re
O.P.M. LEASING SERVICES, INC.,
Debtor
Reorganization No. 81-B-10633 (BRL)

In re
CALI TRADING INTERNATIONAL, LTD.
Debtor
81-B-11389 (BRL)

In re
O.P.M. LIFE INSURANCE FUND,
Debtor
81-B-11740 (BRL)

In re
O.P.M. COMPUTER SERVICES, INC.,
Debtor
81-B-11655 (BRL)

In re
O.P.M. LEASING SERVICES (CANADA), LTD.,
Debtor
81-B-12168 (BRL)

NOTICE OF HEARING ON (i) APPLICATION FOR APPROVAL OF STOCK PURCHASE AGREEMENT, and (ii) CONSIDERATION OF OTHER OR BETTER PROPOSALS

TO ALL CREDITORS AND PARTIES IN INTEREST:

PLEASE TAKE NOTICE, that a hearing will be held before the United States Bankruptcy Court for the Southern District of New York, in Room 2[illegible] of the United States Courthouse, Foley Square, New York, New York on May 2[illegible], 1985 at 2:00 p.m., for the purposes of:

1. Considering the Application for approval of the Stock Purchase Agreement dated May 2, 1985 (the "Agreement") between [illegible] ("[illegible]") and James P. Hassett (the "Trustee"), as Trustee of O.P.M. Leasing Services, Inc. ("O.P.M.") and Cali Trading International, Ltd. [illegible]

2. Hearing and considering any and all other bids or offers for the aforesaid stock and assets and determining, and approving acceptance of, the bid or offer [illegible] the best interests of the Debtors and their creditors.

PLEASE TAKE FURTHER NOTICE that the aforesaid Application and Agreement are on file with the Clerk of the Court, in Room [illegible] of the United States Courthouse, and may be examined and inspected thereat by interested parties during regular Court hours. In addition, copies are available for inspection at the offices of the Trustee and his attorneys at the addresses listed below during regular business hours.

PLEASE TAKE FURTHER NOTICE, that any and all objections must be in writing, shall state the name of the objecting party and the nature and basis of the objection, and must be personally served upon the Trustee's attorneys, with a copy to the Trustee, at the addresses listed below, and filed with the Court no later than three (3) business days prior to the hearing date.

PLEASE TAKE FURTHER NOTICE, that further information may be had from the Trustee or his attorneys listed below.

Dated: New York, New York
May 2, 1985

BY ORDER OF THE COURT
/s/ BURTON R. LIFLAND
UNITED STATES BANKRUPTCY
JUDGE

JAMES P. HASSETT, Trustee of
O.P.M. Leasing Services, Inc.
and Cali Trading International,
Ltd.
[illegible] Street
Greenwich, Connecticut [illegible]
[illegible]

[illegible]
Attorneys for the Trustee
[illegible] Avenue
New York, New York [illegible]
[illegible]

## EXECUTIVE CORNER

**Bruce A. Twichler** has been promoted from the position of senior vice-president to president of Hayden Software Co.

■

**Kenneth S. Scott** has been named president and chief operating officer of Summa Technologies, Inc.

■

**Raymond E. Margerum** has been promoted to president and general manager of the international subsidiary of Applied Data Research, Inc.

■

**Vacmond H. Crane** has been appointed president and chief executive officer of Mips Computer Systems. Prior to joining Mips, Crane was president and chief operating officer of Computer Consoles, Inc.

■

**Hal J. Kreuter** has joined Mad Computer, Inc. as president and chief operating officer.

■

**Ramesh K. Mehta** has been named president and chief operating officer of Inspiration Systems, Inc.

■

**David K. Lam** has been appointed president and chief executive officer of Link Technologies, Inc.

■

**James Simpson** has been elected president of Qume Corp., a subsidiary of ITT Corp.

■

**Ralph Armstrong** has been promoted to president and chief operating officer of Comdesign.

■

**Dr. Stephen Payne** has been appointed president and chief executive officer of PA Computers and Telecommunications in North America.

■

**Masaka Ogi** has been appointed president of Fujitsu America, Inc.

■

**Hitsuke Tomochika** has been named president of Sanyo Business Systems Corp., headquartered in Moonachie, N.J. Most recently, Tomochika was manager of North America sales at Sanyo Electric Co. in Osaka, Japan.

■

Lotus Development Corp. has announced the appointment of **E. C. Prokopis** as senior vice-president, finance and operations.

■

Ducommun, Inc. has announced the election of **David G. Schmidt** as president of the company. Also, the board has elected **W. Donald Bell** senior vice-president and **H. Richard Byrne** vice-president of finance and chief financial officer.

■

**Howard Oringer** has been appointed to the position of executive vice-president of operations and chief financial officer at Televideo Systems, Inc. Oringer joins Televideo from Crowntek, Inc.

■

**Donald D. Bunker** has joined Tallgrass Technologies Corp. as executive vice-president of manufacturing. Before joining Tallgrass Technologies, Bunker was staff general manager at Control Data Corp. Previous to that, he was vice-president of manufacturing for Storage Technology Corp.

■

**Francis X. Kenney** has been promoted to vice-president of systems development, a newly created post at NEC Information Systems, Inc.

■

Network Solutions, Inc. has announced the promotions of **Jane M. Urban** and **Richard F. Hawkins** to vice-presidents of the systems development division.

■

**Gary N. Prague** has been named to the position of assistant vice-president of new product development at Optionware, Inc.

■

**Lindsey C. Y. Kiang**, general counsel and director of federal relations of Yale University, has been named general counsel of Lotus Development Corp.

DETECT DAMAGING WATER LEAKAGE —

WATER ALERT® Surface Water Sensing Alarm Systems

DETECT TEMPERATURE SHIFTS —

RTS-[illegible] Six Point Remote Temperature Scanner

- Produces a loud, intermittent alarm when activated by water
- Early water detection (1/64" water film activating) provides maximum time for corrective action
- [illegible] Water Alert models, both self-contained and remote powered
- 4 & 12 channel Remote Annunciators
- Display and trip preset in °F [illegible] or °C [illegible]
- AC line operated, rechargeable battery back-up
- Over or under temperature trip - relay and logic output
- Ambient or surface sensor - standard wiring to sensors

COMPUTER ROOMS, DATA CENTERS, EQUIPMENT ROOMS, MEDICAL LABORATORIES
PUBLIC UTILITIES, PROPERTY MANAGEMENT

CALL OR WRITE FOR COMPLETE INFORMATION

What You Need To Know About Network Management. . .

Managing Complex, Multicarrier/Vendor Networks! Diagnosing Faults! Crossing Carrier Gateways! Interfacing Voice, Data, and LAN Equipment! Optimizing Hardware, Tariff and Software Opportunities!

Attend the 2nd annual conference & exposition in your area.

NETWORK MANAGEMENT TECHNICAL CONTROL

Education
Information
Technology
Solutions

SAN JOSE: June 24-27 San Jose Convention Center
CHICAGO: Nov. 18-21 Holiday Inn O'Hare

First program and show to ZERO IN on multi-carrier/vendor network operating headaches • See new tech control and software solutions • Self-diagnostic modems & components • Hardware for network optimization, measurement, feedback & performance monitoring • Local network management and interfaces!

Learn at In-Depth Seminars June 24 & 25. Instructors:

Choose from 40 "How-To" Conference Sessions June 26 & 27

Ryan
Net Design

Kasparek
Control Center

King
ISIA

Sotyko
Net Control

Mayfield
T-1 & Strategy

Show Sponsors: Case Rixon Communications, Datacomm Management Sciences, Dynatech Data Systems, Racal-Milgo, PLUS some three dozen other exhibitors!

Exhibits Open: San Jose Convention Center, June 26, 10:00 to 6:00, and June 27, 10:00 to 3:00.

Managed by the team that brings you COMMUNICATION NETWORKS Call 800-225-4698 for full program and exposition information! (In Mass., 617-879-0700)

Or mail coupon to NM/TC, CW/Conference Management Group, Box 880, Framingham, MA 01701

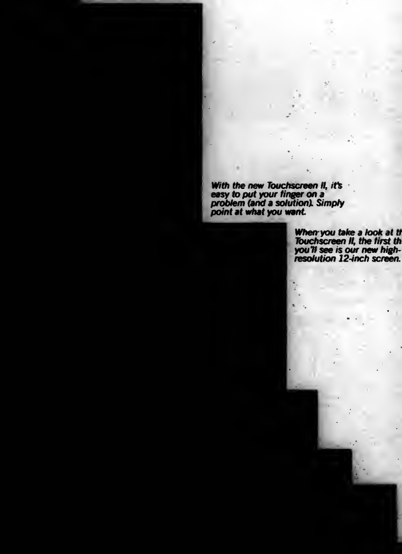
NETWORK MANAGEMENT TECHNICAL CONTROL

Conference and Exposition
Box 880
Framingham, MA 01701
617-879-0700
Outside MA 800-225-4698

☐ YES, register me now for the 1985 NM/TC Conference in San Jose, June 24-27, 1985
CHECK ONE:
☐ Full four-day Conference - Tutorials & Expo (includes lunches) ............ [illegible]* (after May 24th, 1985 ........ [illegible])
☐ "In-Depth" Tutorials all-day Seminars (includes lunch) ............ [illegible]*
Advanced registration required. Price per seminar.
☐ Two-day Conference & Expo (includes lunches) ............ [illegible]
☐ One-day Conference & Expo (includes lunch) ............ [illegible]
CHECK ONE:
☐ Wednesday, June 26 ☐ Thursday, June 27
☐ Please send exhibit information. ☐ Please send further registration information.
(please type or print)
Name & Title ____
Company ____
Street, P.O. Box ____
City, State, Zip ____
Telephone ( ) ____ Ext. ____
☐ Check Enclosed ☐ MasterCard/Visa ☐ American Express
☐ Bill Me ☐ Bill Company (P.O.# ____)
Card # ____ Exp. Date ____ Signature ____
* [illegible]

# INTRODUCING THE HEWLETT-PACKARD TOUCHSCREEN II

## OFFICE AUTOMATION MADE EASY POINT BY POINT.



*With the new Touchscreen II, it's easy to put your finger on a problem (and a solution). Simply point at what you want.*

*When you take a look at the Touchscreen II, the first thing you'll see is our new high-resolution 12-inch screen.*

The new Hewlett-Packard *Touchscreen II* personal computer is the mainstay of an office automation system designed to be easy.

Easy to learn■ Easy to operate■ Easy to place in an office information network.

In short, *Touchscreen II* makes it easy to be productive■ Here are a few pointers.

### WHEN YOU SEE WHAT YOU WANT, POINT.

Sit down to work, and *Touchscreen II* displays a selection of application software on a high-resolution 12-inch screen.

Find the one you want to use, then touch the point on the screen where it appears■ Instantly, the program is activated.

You're freed from typing complicated gibberish commands■ Simply look, touch, and move on.

### THERE'S PLENTY TO POINT TO.

*Touchscreen II* allows you to choose from over 600 of the most popular business software packages■ In addition, you can use Hewlett-Packard's own software library■

Including our new Graphics Gallery, which offers you presentation graphics of a quality previously available only from larger computers ■ And, with HP's new Executive MemoMaker, it's easy to merge graphics with text—right on the screen.

Most of these packages are enhanced through the use of touch and soft keys, which execute complex commands in one stroke ■ This not only speeds the operation of *Touchscreen II*, it speeds the learning process required to use it.

## EVERYONE IN YOUR OFFICE WILL GET THE POINT.

*Touchscreen II* requires minimal orientation, even for the beginning user ■ This is largely due to an ingenious system called Personal Applications Manager, or PAM.

PAM displays program applications as English-language labels ■ These labels when touched or activated through soft keys, get you into programs immediately.

PAM also enables you to accomplish a number of common jobs—such as switching from pc to terminal mode—with a single keystroke.

*Touchscreen II* is easily set up for peripherals like printers and plotters, thanks to the pictorial menu ■ Simply touch the pictures that match the devices in your system.

## GET YOUR POINT ACROSS.

*Touchscreen II* makes it easy to communicate.

Built-in terminal capabilities and a variety of data communication devices allow *Touchscreen II* to exchange information with Hewlett-Packard, DEC and IBM host computers ■ Acting as a terminal, *Touchscreen II* enables you to tap into the power of these larger computers, making use of their software, databases and peripherals.

*Touchscreen II* will also relay information among pc's (including IBM) and peripherals as the hub of a 3Com™ Ethernet Local Area Network.

## A BIG HAND FOR OUR PERIPHERALS.

Plotters, LaserJet and ThinkJet printers, mass storage devices, user interfaces and more are available from Hewlett-Packard.

And they're all built to Hewlett-Packard's meticulous standards of quality ■ Not merely quality of construction ■ But a quality of thinking that precedes it.

If you'd like more pointers on the quality and simplicity of the new *Touchscreen II*, call us toll-free at 1-800-FOR-HPPC, Dept. 282A, for the name of your nearest Hewlett-Packard dealer or sales office.

The more you simplify, the more you'll produce ■ And productivity is, after all, the point of this discussion.

3Com™ is a U.S. trademark of 3Com Corporation.

**HEWLETT PACKARD**

• ADVERTISEMENT • ADVERTISEMENT •

**Directories List 32,000 D P Users**

Each directory of computer installations lists 16,000 computer users covering the NY Metro Area (NY, NJ & CT), and the Mid-Atlantic States (PA, VA, MD, DC, WV & DE).

Each site includes a profile of the hardware installed, software installed, (languages, databases, etc.), consultants used, future plans, applications and DP executives' names, titles, and phone numbers. An index provides quick access to 133 cross references by hardware, software and industry. Price: NY-$370 and MA-$295. Call (212) 683-0606. Computer Management Research, Inc. 20 Waterside Plaza, NY, NY 10010.

• ADVERTISEMENT • ADVERTISEMENT •

## COMPUTER INDUSTRY

### SUPERSHORTS

Intecom, Inc. has established an International Switching Products Division. The purpose of the division is to introduce and provide support to users of telecommunications and DP features for the company's line of voice/data products internationally, the firm said.

■

GTE Supply has started a business unit to supply DP and information systems managers with data communications products.

The unit, called GTE Data Communication Products, markets a full line of items, including modems, multiplexers, printers, protocol converters, terminals, workstations, connectors, cable, supporting equipment.

■

BKW, Inc. of Nashua, N.H., announced it has been named as a defendant in a $6 million law suit filed by the Barton Group of Los Angeles.

The suit alleges breach of contract and other matters in connection with BKW's termination of its plans to acquire the Barton Group. BKW announced on Jan. 15 that this termination was based primarily on the Barton Group's failure to meet all of the terms and conditions spelled out in the original letter of intent between the two companies.

■

Jerome Dreyer, president of the Association of Data Processing Service Organizations, Inc., has been appointed to the industry sector advisory committee on electronics and instrumentation for trade policy matters. The committee acts as an advisory body on trade policy matters.

■

Atlantic Research Corp. has acquired the rights to manufacture and market a line of computer enhancement devices, called the M-60 series, which were developed and previously marketed by Onyx, Inc. of McLean, Va. Atlantic Research established a subsidiary, Memory Sciences Corp., to market the M-60 line. George Dill, formerly president of Onyx, is the president of Memory Sciences.

■

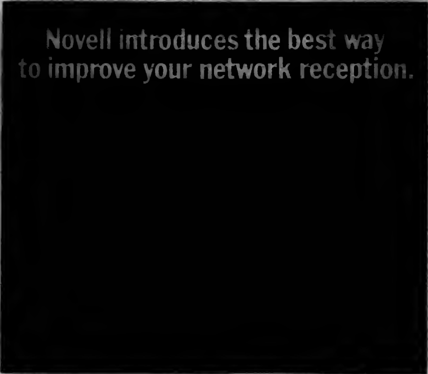
Amdahl Corp. has signed a distributorship agreement with Centel Business Systems, an operating unit of Centel Corp., under which Centel Business Systems will market Amdahl's data and voice communications products. Products covered by the renewable contract include Amdahl's 982 series of limited-distance modems, 983 series of data service unit/channel service unit products, and the 2211 time-division multiplexers. The announcement was made at the Communication Networks Conference and Exposition held in Washington, D.C., in January.

Centel also will provide field service and technical support for these products. Amdahl's worldwide sales organization will continue to market, service and support its line of communications systems products directly.

■

NBI, Inc. announced a recent out-of-court settlement with Datascan, Inc., a California-based corporation, for Datascan's alleged illegal copying of NBI Oasys 3000 software.

NBI's complaint against Datascan, filed in 1983 with the U.S. District Court for the Central District of California, alleged copyright infringement, unfair competition, conversion and unjust enrichment.



Novell introduces the best way to improve your network reception.

In a relatively short time, the local area network (LAN) market has attracted a host of suppliers. Each has a LAN system to sell. And each is fighting for a proverbial piece of the LAN pie.

Amid all these LAN contenders, only one company is out to make all LAN systems perform better. Only one company offers high-powered LAN operating system software that improves the performance of every major LAN system on the market. Only one company is finishing the job the other LAN makers begin.

The company is Novell. The company's solution is NetWare.

**NetWare performs.**

How good is NetWare? In recent benchmark tests conducted by Novell as well as Belmont Laboratories, NetWare significantly improved the performance of every LAN system tested.* In fact, NetWare currently runs on 24 different LAN hardware systems, outperforming the original software for every one.

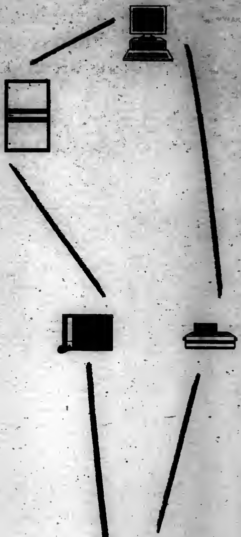
**Serving all LANkind.**

Whichever LAN hardware you choose, NetWare is the LAN software designed to get the most out of your network. When it's time to improve the reception your network gets from those who use it every day, plug into NetWare. It's from Novell, the people dedicated to serving all LANkind.

For more information, call or write Novell, Inc.
1170 N. Industrial Park Drive Orem, Utah 84057
(801) 226-8202

*LAN Benchmark Report, May, 1985, Novell, Inc. and "Software,Not Hardware Key to LAN Performance," *PC Week* 1/15/85.

NOVELL



# THE HIP BONE'S CONNECTED TO THE THIGH BONE, THE THIGH BONE'S CONNECTED TO THE KNEE BONE...

**Only AT&T now offers the total networking solution for all your business communications.**

By now, everyone knows how important it is to get all your office equipment working and communicating together. You also know how difficult it is.

Some networking solutions are fine for one function, but not so fine for another. Others are great in one neighborhood, but are lost outside of it. Still others are downright snobby about it all—they'll only work with their own kind.

AT&T can now put virtually all your equipment on speaking terms, no matter what it does, where it is, or whose logo is stamped on it.

It all starts with our Premises Distribution System (PDS), the only wiring scheme that connects local area networks, like our own Information Systems Network (ISN), or AT&T STARLAN PC Network; AT&T System 85 and AT&T System 75 PBXs; workstations; even IBM equipment.

To this full line of networking and communications products, AT&T now announces the following enhancements:

***PBX-LAN Integration.*** PBX for voice, LAN for data, and never the twain shall meet. Right? Wrong. PDS—the common wiring scheme we mentioned—brings them together.

Through it, our System 85 or System 75 PBX can now be fully integrated with our local area network ISN, giving you the powers of both in a single system. What's more, we've increased the number of lines System 75 can handle, and given it even greater networking capability.

Linking multiple ISNs and PBXs over a large area gives you a wide area network. So across the street or across the country, you'll get fast, efficient voice and data communications throughout your entire corporation.

***STARLAN Interface.*** STARLAN is our new PC network. It links PCs, allowing them to exchange data. STARLAN Interface links STARLANs. So our PC networks can work together as well as with other PCs, mainframes, or any devices hooked into ISN. Once again, credit the elegant simplicity of our common wiring system, PDS.

***ISN-Ethernet* Bridge.*** This essentially does for Ethernet Local Area Networks what STARLAN Integration does for STARLANs. It links multiple Ethernets into one large network. So terminals and devices on one Ethernet can communicate with those on another more effectively than ever before.

***IBM** Compatibility.*** This oft-heard phrase usually has to do with IBM PCs. But here we're talking about something bigger—IBM mainframes and 3270 terminals. Now, with ISN or our PBX, you can consider those 3270's emancipated. Each terminal is free to access many IBM mainframes, rather than be enslaved to a single one. And low-cost dumb terminals can do the same.

A total networking solution may not be as difficult as you thought. All you've got to do is use the old headbone, and make the right choice—AT&T. For more information call your AT&T Information Systems Account Executive, or 1-800-247-1212.

**AT&T**
The right choice.

*Ethernet is a registered trademark of Xerox Corp.
**IBM is a registered trademark of International Business Machines Corp.
©1986 AT&T Information Systems.

## TANDON

from page 71

36% and flexible disk drives 40%, Tandon said.

Because its long-term OEM relationship with IBM faltered earlier in the year when IBM canceled and then reinstated a contract for full-height 5¼-in. floppy disk drives, the company has increasingly emphasized direct sales of its disk products to Computerland Corp., Convergent Technologies, Inc., AT&T, Sears Roebuck and Co. and Tandy Corp., he noted.

### Short-term revenue a problem

But Tandon admitted that short-term revenue is "a major problem," primarily because of the shift in the firm's customer base, the transition to new products and a soft personal computer market.

In a cost-cutting move, Tandon earlier had trimmed its offshore production to 11,000 units, compared with a potential peak capacity of 80,000 units. The company will also reduce its U.S. manufacturing operations by 20% during the next six months, Tandon said.

The company will refuse new business from IBM unless it is long term, according to Tandon. "A short-term strategy with IBM is too risky," he said.

### Can sell higher to non-IBM customers

Tandon claimed that the company can sell its 80M- and 40M-byte half-height products, used in IBM's Personal Computer AT, at 50% higher prices to its non-IBM customers. He predicted the company would ship 10,000 of these products to non-IBM customers this quarter.

One constant during 1985 will be Tandon's ability to remain competitive in price, Tandon said. The company's 10M-byte disk drive will sell for $160, its 20M-byte, 3½-in. hard disk drive will cost $200 in OEM quantities, and a 30M-byte drive will sell for less than $300, he said.

Negotiations are currently under way with Sperry Corp., Atari, Inc. and Digital Equipment Corp. to purchase these products, Tandon said.

The system-side of its business is also beginning to earn significant revenue, he said. Tandon has sold $75 million worth of its XT personal computer product, released last October under a private-label agreement with Tandy. In addition, evaluation units of its AT product have recently been shipped to Tandy and a European OEM that Tandon declined to name.

# Ventures: Funds exist, sources vary

By Edward Warner
CW Staff

ATLANTA — Budding entrepreneurs who want to woo venture capital onto their threadbare balance sheets had better own a company that is selling a medical data base, used computers or discontinued software.

Those who do own such companies might want to call A. David Silver right away. His Santa Fe, N.M.-based venture capital investment banking firm, A. David Silver & Co., is looking to fund such ventures, which comprise the few in the computer industry that are of interest to him.

Silver, a panelist in a presentation on venture capital funding at Comdex/Spring '85 here, said the erstwhile entrepreneur need not worry too much if his new company's specialty is not on that list. Alternative funding sources, such as federal and state business development grants and up-front loans from firms that plan to become large customers, represent some of many ways to circumvent or supplement venture capital financing.

Ultimately, the newcomer to private enterprise may not need the venture capitalist anyway, Silver said, pointing to his survey of what he called the top 100 entrepreneurs of the last 25 years. Only a quarter of those had received any venture capital, he said.

Another panelist, Jeffrey D. McKeever, president of the Microage Computer Stores, Inc. retail chain, advised his listeners to line up all of the capital they will need before hard times hit. A rule of venture capital, according to McKeever, is that "when you do need it, it's too late to afford it."

# Mostek to cut 2,000 workers

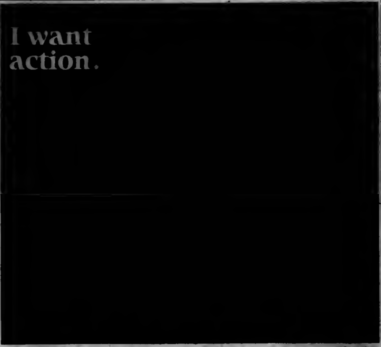
CARROLLTON, Texas — Mostek Corp., the semiconductor division of United Technologies Corp., announced recently it will dismiss 2,000 employees from its manufacturing plants here and in Colorado Springs.

The company stated that it will lay off 1,600 workers at its plant here and 400 in Colorado Springs, reducing its worldwide employment to 6,300.

The work force reduction, said to be based on the continued downturn in the semiconductor market, follows an earlier reduction of 1,600 workers in Malaysia.

Mostek said it will close its Colorado Springs wafer fabrication facility. Most other leading semiconductor manufacturers have taken similar actions in light of the industry's continuing sales slump.

United Technologies reportedly told analysts last month that Mostek lost more than $40 million in the first quarter of this year.



3RD ANNUAL PC EXPO ADVANCE REGISTRATION

NEW YORK
COLISEUM
JUNE 17-19
1985

PC EXPO

NAME
BUSINESS TITLE
COMPANY
COMPANY ADDRESS
CITY
STATE
ZIP
MAIL STOP (if any)
TELEPHONE

Use one form per person. Photocopy if necessary.

PC EXPO attendees must be qualified. Please check one box only in each of Fields I and II or Fields I and III. (Others may not register.)

[illegible]

Save Money and Time! Register by Mail

☐ 1 day $20—Date must be given here ____

☐ 2 or 3 days—$30
(On-site registrations are $25 for 1 day, $30 for 2 or 3 days.)

[illegible]

Mail check payable to PC EXPO with completed registration form to: PC EXPO, P.O. Box 1020, Englewood Cliffs, NJ 07632.

☐ Check here to receive free PC EXPO Volume Buyers Guide.

Signature ____

## INDUSTRY

from page 71

might have to start updating their resumes when clients begin to add up the paper losses with which they've been hit.

■

The bankruptcy filing by Columbia Data Products, Inc. [CW, May 13] raises yet again the potential of an orphaned family of computers. Yet one of Columbia's large customers is not too worried.

Honeywell, Inc. resells Columbia Data machines under the Honeywell label, and last week the vice-president of Honeywell's Small Computer and Office Systems Group managed to find an element of good news to Columbia Data's Chapter 11 filing.

Gene Manno, head of the Billerica, Mass.-based Honeywell division, said the protection from creditors that Columbia Data will receive under the Federal Bankruptcy Act will enable the Columbia, Md., company to get its organization into shape.

Columbia Data, Manno said, "has continued to build and to deliver [under] its contracts." The filing will not affect Honeywell's sales, he said, because "the one we sell has the Honeywell label on it."

Nevertheless, Honeywell Vice-Chairman James J. Renier revealed that the company has been studying additional resale agreements with a number of other vendors and expects to make an announcement soon.

Regarding the industry slump that led his division to announce layoffs and enforced vacation periods, Manno said, "It appeared to us early, and we were able to anticipate the first-quarter [downturn], but it is continuing into the second quarter."

## EXPORTS

from page 71

merce Department] cast a very wide net," said Boston attorney Robert Birnbaum, whose clients include Cullinet Software, Inc., Computer Corp. of America and Applicon, Inc. "There was a tremendous outcry as soon as the regulations were published. It was like saying you can drive your car, but you have to get permission from the police every time you drive it.

"The way [the regulations] were written, they could have been used to apply to anyone producing anything other than a [personal computer] spreadsheet or a video game."

Birnbaum said the regulations would have been particularly restrictive to companies attempting to export software designed for data base management, computer-aided design and manufacturing, microprocessor development, interpreting and compiling and high-level language-based development systems.

"I think the folks in Washington, D.C., have no idea how many people are out there making software," Birnbaum said. "When that dawned on them, they realized there wasn't enough paper to accommodate the flood of applications."

The regulations never officially took effect after they were announced. Their enforcement was delayed until February and again until April 29.

Adapso and Cbema held seminars here and in Boston, San Francisco and Dallas to encourage opposition to the regulations. Approximately 250 industry representatives attended each seminar, according to an Adapso spokesman.

## RENIER

from page 71

gration and 20-year history in controls. With established customer bases in both areas, he said, "Customers are asking Honeywell to take on the systems integration role. This is especially true in the areas of industrial automation and office automation."

Renier said IBM "will sell a lot of mainframes [in the industrial automation] area, but won't dominate it like it has the financial industry and the insurance industry." The emerging market, he said, requires vendors that can provide large, value-added systems.

### 'One thrust, one company'

For years, Renier said, Honeywell purposely kept its mainframe business separate from its other businesses. Now, "we should have one thrust, one company, one organization," he added.

One element of that strategy is the decision made last year to resell NEC Corp. mainframes as top-of-the-line Honeywell DPS 90 machines.

Renier said the company did not cut back expenses through that alliance because it "simply had never been doing research and development at the mainframe levels above the DPS 88," Honeywell's previous high-end machine.

Renier pointed to Honeywell's 20-year relationship with NEC, to which it recently sold its Japanese subsidiary, and said the business alliance was "very easy." He rejected industry perceptions that the relationship became strained when NEC challenged Honeywell for its business with General Electric Information Services Co. (Geisco).

The challenge for a new contract to supply the CPUs for Geisco's time-sharing networks was, according to Renier, "simply an event that occurs in the life of a business; there was a very obvious direction in which to go, and we did that." That direction was the agreement to bundle Honeywell's operating system with NEC's large mainframe.

Regarding the current sales slump many vendors are experiencing, Renier said Honeywell recognized a trend last fall and tried to prepare for it. However, he noted, "The softening was deeper than we expected to see." Honeywell's Massachusetts-based Small Computer and Office Systems Group recently announced some layoffs and mandatory vacation periods [CW, April 15].

When the worst happens...
You can get the best of it!

OPERATOR ERRORS
HEAD CRASHES
HARDWARE MALFUNCTIONS
POWER LOSSES
PROGRAM BUGS

Your on-line processing begins at 8:00 a.m. At 4:00 p.m. there's a crash! Three vital files are gone — wiped out!

Now you're on the phone with the payroll supervisor. You think he's shouting something about printing checks, but you can't hear very well with the controller pounding on your desk. He's yelling in your face about billing and collections. And now, you see the inventory control supervisor heading for your office. He's waving the inventory printout over his head like a banner, and his face is lobster red!

Someone will be held accountable for this lost time and money… Will it be you?

DATA RECOVERY SYSTEM

Ensure Data Integrity

The Data Recovery System (DRS), from Sterling Software Marketing *ensures data integrity and minimizes the problems associated with lost or corrupted data.* Once you invoke DRS, the system automatically reconstructs data without the need for source documents.

Restores Data Without Data Re-entry

Through journal processing, DRS provides *forward data recovery to the point of failure.* Now you can recover data without time-consuming manual file recovery and data reconstruction. You won't have to spend frustrating hours explaining or apologizing for disruptions or backtracking to locate lost entries. Using records which are journalled on an ongoing basis, DRS provides rapid data recovery, *with minimum disruption to your critical online environment.*

DRS also provides historical tracking and complete audit trail information. This enables you to analyze what went wrong, and helps you to prevent another emergency. In addition, DRS allows you to *back out* bad changes in files. And, with DRS's *simulate* mode you can see the effects of a recovery or reconstruction before you carry it out.

Data Recovery System
Ends The Data Loss Nightmare

For more information about Data Recovery System, call TOLL FREE 800-824-8512 or 916-635-5535 collect, in California, Hawaii, Alaska and Canada.

STERLING SOFTWARE MARKETING

11050 White Rock Rd., Suite 100, Rancho Cordova, CA 95670-6095

# POSITION ANNOUNCEMENTS

## COMPUTER PROFESSIONALS

As a major water and power utility in Arizona, maintaining top performance depends on our state-of-the-art computer technology. That's why we use sophisticated computer systems like the IBM 3084, IBM 3033, with MVS/XA, VM, CICS, IMS and dual IBM 3800 M3's. Add to this our extensive off-line system of PC's and terminal/printer network, and the IBM 4381's that are used to support Distributed Data Processing. Our operating environment includes TSO/SPF, VM/CMS, 4 GL support development tools, and COBOL, along with a wide variety of structured methods.

If you have a degree in Computer Science, Business Management or Mathematics you owe it to yourself to talk to SRP. We're especially interested in speaking to computer professionals with at least 2 years of experience to fill these positions:

- DP TECHNICAL WRITERS
- DATA BASE ADMINISTRATORS
- DATA ANALYSTS/DATA MANAGER DICTIONARY
- COMPUTER OPERATORS
- DATA MODELER
- PROGRAMMER ANALYSTS
- COMPUTER OPERATIONS ANALYSTS
- SYSTEMS PROGRAMMERS
- RESOURCE PLANNERS

- A VARIETY DP OTHER COMPUTER SPECIALISTS

SRP is talking your language! And, we can offer you the opportunity to work in a state-of-the-art IBM environment with top professionals in your field. Learn more about the unlimited recreational and cultural attractions of Phoenix, Arizona and our excellent compensation and benefits program. Send your resume and salary history to: S. Kranicz, Salt River Project, Dept. CW520, P.O. Box 52025, Phoenix, AZ 85072-2025.

**Salt River Project**

WATER ◆ POWER

An Equal Opportunity Employer

---

**DIRECTOR OF ADMINISTRATIVE COMPUTING SERVICES AND COMPUTER CENTER**

Lynchburg College in Virginia seeks a Director of Administrative Computing Services and Computer Center. Current equipment at Lynchburg College consists of two DEC/VAX 11/780's with current applications programmed in VAX BASIC. The Computer Center provides services for both academic and administrative computing in a private, [illegible] college of 2,100 students located in Lynchburg, VA, [illegible]

Applicants should submit a letter of application, resume, 3 references and salary history to [illegible], Vice President, Business & Finance, Lynchburg College, Lynchburg, VA 24501. Application Deadline is June 15, 1985. Equal Opportunity Employer.

---

[illegible]

[illegible], CPC (704) [illegible]

**Corporate Personnel Consultants, Inc.**

[illegible]

Charlotte, N.C. 28211

---

**EXPERIENCED SYSTEMS PROGRAMMERS, ANALYSTS AND PROGRAMMER ANALYSTS FOR SUNBELT LOCATIONS**

Job dissatisfaction, complacency, and frustration are the biggest obstacles to overcome to achieve one's career goals. Everyday new career opportunities pass us by because we are unaware of their existence. Let us keep you abreast of what your true value is in the market place. Absolutely no obligations, please call or write Keith Reichle, CPC, Data Processing Specialist.

**Dunhill**

OF CHARLOTTE, INC.
[illegible] Carmel Road, Suite 107
Charlotte, North Carolina 28226
800-[illegible]
(NC Call) (704) [illegible]

---

**DL1 DATA BASE ANALYST**

Outstanding Western NY foods processor has immediate need for DL1 Data Base Analyst. Will have total D.B. respon. Req. min. 2 yrs' exp. w/DL1 & solid bkgrd. in DOS/VSE & CICS environ. COBOL & TOTAL knowl. desirable. Pleasing rural setting w/low cost of living. To $31,000.

[illegible]
OF BUFFALO, INC.
[illegible] Main Street
1310 Liberty Building
Buffalo, NY 14202
(716) [illegible]
Personnel Agency

---

[illegible]

Our computer can help you get here or stay here. Four WATS lines; 10 years' experience; 370 affiliated offices; 300+ current job orders; 2000+ company clients from Virginia to Texas to Florida! Send resume to:

**Data Resources, USA**
Division of Landrum Personnel Resources
P.O. Box [illegible]
Pensacola, Florida [illegible]
CALL TOLL FREE [illegible]
IN FLORIDA [illegible] COLLECT

---

**MAINE - N.H.**

We have specialized in data processing professional placement in Maine & N.H. for a fifth of a century. If you qualify for positions in the $25-40,000 range, please contact us in total confidence. Our clients pay our fees and provide relocation assistance.

**ROMAC.**
477 Congress St.
Portland, Maine 04101
(207) 773-[illegible]

---

**IN SAN FRANCISCO IT'S SPRING YEAR 'ROUND!**

DATA PROCESSING PROFESSIONALS skilled in [illegible] – DATA-BASE or ON-LINE SYSTEMS – Consider a move to the beautiful SAN FRANCISCO BAY AREA. Career opportunities offering CHALLENGE, GROWTH and REWARDS.

**LOGICAL OPTIONS**
[illegible]
San Francisco, CA [illegible] • [illegible]

---

**TEXAS**

Our function is to represent the TEXAS area to you and our client companies allow us to do our job. We can help you move to TEXAS if you are experienced in the data processing field. Affiliate offices throughout TEXAS.

2720 Stemmons Frwy., [illegible]
Dallas, TX [illegible], (214) [illegible]

DATA PROCESSING CAREERS

# Perhaps The Greatest Development Challenge A Systems Professional Has Ever Faced...

## And You Will Be Right At The Center When You Join Us In The San Francisco Bay Area.

**We Are Talking About One Of The Largest Development Projects Ever.**

Bank of America has undertaken one of the largest systems development projects ever by a financial institution. Upon completion, Bank of America's International Banking Systems will link over 2500 terminals spanning the globe from Frankfurt to London to New York to San Francisco to Hong Kong. Utilizing IMS DB/DC technologies, the entire project will be centrally managed from San Francisco, so you'll be able to take advantage of our vast technological resources.

**We Use Technology Aggressively And Strategically To Build Value, Quality And Service.**

You will be involved in the development of a fully-integrated real-time global banking system. This system uses the most advanced technology to achieve worldwide delivery of financial services. You'll work in a new, highly responsive, multi-technology development environment—one designed to provide development capabilities equal to the IBS challenge.

Initially, you'll be working in San Francisco and will later move to Bank of America's new Bay Area Technology Center.

**We Are Looking For The Right Experience.**

We are particularly interested in talking with you if you have a proven track record in banking/financial systems applications development, and have worked in a large scale IBM MVS, IMS, COBOL environment with integrated on-line IMS DB/DC based systems. Demonstrated hands-on experience with systems design, programming and testing in a mainframe environment is required. All positions require superior analytical, written and oral communications skills.

**We Have Exceptional Opportunities Available Now.**

We have openings in Systems Management, as well as a wide range of technical positions. If you have a solid background in MVS, COBOL, IMS DB/DC, IMS ADF, in an integrated on-line environment and have 3 or more years experience in design, programming, testing or project planning, we would like to hear from you.

Our Systems Architecture Group has openings for individuals with experience in IMS and MVS modeling and prototyping. Additional opportunities exist for candidates with knowledge of international banking applications, combined with a strong systems analysis background.

**We Respect Diversity, Recognize Contribution, And Reward Achievement.**

We're looking for results-oriented innovators to play a major role in the development of our global systems network. We offer an outstanding salary, benefits and relocation package designed to attract and maintain top professional talent.

**We Are Prepared To Move Quickly. So Must You.**

But we can't respond until we've heard from you. Please forward your resume and salary requirements to: Sr. Staffing Specialist, Global IBS Staffing, Dept. 5302-CW520, Bank of America NT & SA, P.O. Box 37000, San Francisco, CA 94137. An equal opportunity employer. *Only direct applicant inquiries will be considered.*

**Share Our Strategy. Strengthen Our Team.**

**Bank of America**

# Data Processing Professionals:

## Participate in NEW developments utilizing on-line and DB technologies!

Northrop DSD, as a leader in the electronics industry with annual sales in excess of $[illegible] million continues to grow to meet the needs of its customers. Outstanding opportunities are available to those professionals who aspire to participate in new developments utilizing the latest in on-line and data base technologies.

**Systems Analysts**

We seek:

- 5+ years experience utilizing CICS, IDMS, MVS and COBOL;
- Background in total design/analysis of manufacturing engineering applications (e.g., Bills of Material);
- Degree or equivalent experience preferred.

**Data Base Analysts**

We seek:

- 5+ years DP experience;
- 2 years IDMS;
- IDMS internals and related utilities, a plus;
- Experience interfacing with application development and information center for end user computing;
- Degree or equivalent experience preferred.

**Our Environment**

Utilizes an IBM 308X running MVS and IDMS, CICS command level; COBOL.

We offer:

- Outstanding growth potential;
- Competitive starting salary and full range benefits package, including tuition reimbursement, savings plan 401(k), generous vacation plan, health/dental coverage and retirement program.

For immediate consideration, forward resume with salary requirements to: Mr. David [illegible], Personnel Representative, NORTHROP CORPORATION, Defense Systems Division, 600 Hicks Road, Rolling Meadows, IL 60008. We are an equal opportunity employer M/F/V/H.

**NORTHROP**

**Defense Systems Division**
Electronics Systems Group

**Northrop DSD: Where the individual thrives...on innovation.**

---

**SENIOR PROGRAMMER/ ANALYST**

Lancaster-based corporation seeks experienced professional for project leadership and the analysis and programming of business applications. Responsibilities will include defining, coding, testing and implementing new programs/systems from predefined specifications; presenting design and programming needs to management; developing user guides and presentations of on-line systems; and maintenance of all on-line systems.

This individual will have at least two years' experience in:

- System analysis and design techniques
- DEC equipment, including VAX with VMS
- Structured programming techniques in COBOL

The successful candidate will possess an Associate's, B.A., or B.S. in Computer Science or six years' current experience in coding business applications; project supervision and coordination abilities; and complete knowledge of COBOL and BASIC languages using structured design methodologies. Send resume and salary requirements to: Personnel Dept.

**ISC Technologies, Inc.**
Member of International Signal & Control Group
3700 Electronics Way P.O. Box 3040
Lancaster, PA 17601-3040
"[illegible]"

---

**COMPUTER PROGRAMMER ANALYST**

The College of Veterinary Medicine at Mississippi State University is seeking a Computer Programmer Analyst. Applicants must possess a bachelor's or master's degree in Computer Science with at least one year of programming experience. [illegible] degree is preferred. [illegible] experience may be substituted in lieu of degree. Experience in any of the following areas is highly desirable: MUMPS, COBOL, [illegible], VAX System Management.

Background in any of the following application areas would be helpful: Veterinary Practice, Hospital Administration, Medical Records, Educational Administration, Office Automation.

Salary Commensurate with experience.

Send letter of application, including current resume and names of three references by July 15, 1985 to: Ms. Barbara [illegible], Assistant Coordinator, Support Staff and Budget, College of Veterinary Medicine, Mississippi State University, Drawer V, Mississippi State, MS 39762. Mississippi State University is an Affirmative Action/Equal Opportunity Employer.

---

**SYSTEMS ANALYST**

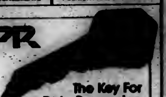
Expanding southern co. seeks 3-5 yrs. on-line COBOL exp. with at least 1 yr. on HP 3000, running COGNOS/POWER HOUSE. Must have fin'l apps. and some supervisory exp. Excel. sal. & benefit pkg. To $30,000

**SYSTEMS/TECH SUPPORT**

Min. 3 yrs. DEC/VAX exp. Will provide tech support to development team. Applications background a plus. Fee paid. To $40,000

**[illegible]**
of New Orleans
P.O. Box [illegible]
New Orleans, La. [illegible]
(504) [illegible]

---



**APR**

## The Key For Data Processing Professionals Seeking Growth

Advanced Programming Resources, Inc., a dynamic, growth-oriented contract services organization is searching for individuals in the SOUTHEAST REGION with 3-6 years work experience in telephony and advanced communication technologies to fill these positions:

## Software Engineers/ Hardware Engineers

- Real time software systems architecture, design, development, programming and maintenance
- Data communications experience involving asynchronous and synchronous protocols such as X.25
- Micro-processor-based software development and debugging network protocols and intelligent peripherals
- Operations support system development
- Telecommunications systems planning, switching system requirements, call processing, power systems, tool development and writing device drivers
- Structured programming and configuration control
- Firmware development for I/O
- Signalling processing/packet switching
- CCITT signal system 5, 6, 7
- Intel 8086
- Large application software experience

Individuals with BS/MS/Ph.D. degrees in Electrical Engineering and/or Computer Science preferred.

APR provides an excellent salary (commensurate with years of experience and education), along with fully paid company benefits. If you feel you want to join the leader, please call and/or send your resume, in confidence, to: Corporate Recruiter, ADVANCED PROGRAMMING RESOURCES, INC., [illegible] N. High Street, Columbus, Ohio [illegible], 614-[illegible]. An equal opportunity employer, m/f.

**APR**
**ADVANCED PROGRAMMING RESOURCES, INC.**

---

**PURDUE UNIVERSITY CALUMET**
**Department of**
**COMPUTING, TELECOMMUNICATIONS AND USER SERVICES**

Urban University, southeast of Chicago, invites qualified candidates to submit applications for positions in an expanding computer and telecommunications department. Campus resources currently consist of an IBM 4341 mainframe with an [illegible] front end processor and [illegible] terminals attached, two VAX 11/780 and one PRIME [illegible] mini-computers with more than 175 terminals attached, a FOUR PHASE [illegible] Word Processing system with [illegible] work stations, more than 100 micro-computers (principally IBM PC's), a DCA digital data switch and a [illegible] voice switch. Additional resources include access to a CYBER 205 processor and a host of other computing systems and software.

**ASSOCIATE DIRECTOR for TELECOMMUNICATIONS and SYSTEMS:**
Provide leadership through development and implementation of long range plans, policies and procedures for cost effective and efficient installation and support of voice, data, video, etc. networking. Incumbent will also be responsible for management of Systems Programming team which installs and maintains operating system software on a variety of host computing/telecommunication systems. Successful candidate must have earned a Master's degree in CS, EE, Computer Technology, etc. (earned Doctorate preferred) and must have managerial experience in a large scale telecommunications operation.

**ASSOCIATE DIRECTOR for USER SERVICES:**
Responsible for long range planning and directing of technical support activities in the areas of User Consulting, Computer and Telecommunication Operations and Application Programming. Incumbent will develop and administer standards to promote and support integration of computing/telecommunications resources into academic, research and administrative areas. Master's degree in CS, EE, Computer Technology, etc. (earned Doctorate preferred) and previous supervisory experience is required.

**SUPERVISOR of CONSULTING:**
Incumbent supervises the daily activities of a User Consulting team which provides one-on-one technical support for the campus computer user community consisting of faculty, students, researchers and administrators. The consulting services include publication of newsletters, technical documentation, development of special purpose software and presentation of workshops/seminars. Degree in CS, EE, Computer Technology, etc. (Doctorate preferred) and working knowledge of several programming languages is required.

**USER CONSULTANT:**
Incumbent serves on a team of technical support personnel who provide to the campus user community assistance with the integration of computing resources into academic, research and administrative areas. Duties include publication of [illegible], [illegible] presentations, software development and [illegible] and technical consultation with faculty and staff. An Associate degree in CS, EE, Computer Technology, etc. (BS degree preferred) and working knowledge of several programming languages is required.

**SUPERVISOR of COMPUTER ENGINEERING:**
Incumbent supervises and coordinates Computer Engineering staff activities. Responsible for the design, installation, [illegible], documentation, maintenance and repair of a wide variety of terminals, computers (micro's, mini's, etc.), computer peripheral and telecommunications equipment including interfaces between various devices.

All positions require good written and oral skills. Applications for all positions will be accepted through June 22, 1985.

Send resume to: PURDUE UNIVERSITY CALUMET
Attn: [illegible], Director
Computing, Telecommunications and User Services
Hammond, IN [illegible]
An Affirmative Action/Equal Opportunity Employer

## IMMEDIATE OPPORTUNITIES

[illegible]

---

## INFORMATION RESOURCES EXPANSION PHASE I

[illegible]

---

## DATA ANALYST

[illegible]

---

## SYSTEMS PROG/APPLICATIONS PROG INTERFACE

[illegible]

---

# Building on past exp[illegible] tomorrow's [illegible]

The following openings are for Southern California and Marietta, Georgia. Applicants should possess an advanced degree and a minimum of 2 years' experience.

## Electronics & Electro-Optics

Advanced Communications, Signal Processing, VLSI/VHSI, Image Processing, MMW, Image Fusion.

## Advanced Software

Artificial Intelligence, Real Time AI, Reusable Software, Signal and Symbolic Processing Architectures.

## Fluid Dynamics

Shear Flows, Vortex Flows, Turbulence, Hypersonics, Powered Lift, Combustion.

## Physics, Chemistry & Materials

IR, Lasers, Electromagnetics, Wave Theory, Physical Chemistry, Polymer Chemistry, Metallurgy.

We also have openings in Scientific Computing for CRAY, VAX, and IBM Systems Management, Applications and Operations, Test Data Systems, and Networks.

The technical expertise responsible for some of the most dramatic accomplishments in aeronautics is coming together in a single organization.

Lockheed Advanced Aeronautics Company was formed to combine the spectrum of experience covered by the divisions of Lockheed-California, Lockheed-Georgia, and Lockheed Aircraft Service Company.

This base of experience includes the C-5 airlifter, the TR-1 reconnaissance aircraft, the legendary SR-71 Blackbird, and numerous advanced modifications and systems integration programs. To apply this pool of experience to future projects, Lockheed has already committed more than $100 million to the development of new facilities. A Weapons Systems Simulation Center of unmatched sophistication, a new research complex, and a CRAY supercomputer are just the beginning.

In addition to drawing on the most experienced personnel from other Lockheed divisions, Lockheed Advanced Aeronautics Company wants additional talent to build its new Advanced Research and Scientific Computing Organizations.

Help start some of tomorrow's most exciting projects. Forward your resume in confidence to Director of Technical Development, Lockheed Advanced Aeronautics Company, Dept. 107-3, 25115 Avenue Stanford, Box 2, Valencia, CA 91355. Lockheed is an equal opportunity, affirmative action employer. U.S. citizenship is required.

**Lockheed Advanced Aeronautics Company**

Giving shape to imagination.

---

# MANAGER OF M.I.S. RECRUITING

Fortune 50 retailer is seeking a Recruiting Manager for the Management Information Systems area of the company.

The ideal candidate will have a minimum of 3 years experience recruiting personnel plus 2 years hands-on experience in MIS. Ability to recruit and technically converse with MIS personnel required. B.S. degree in Information Systems or Computer Science a plus.

We offer a top salary and benefits including Paid Relocation.

Confidential resume & salary history to:

Box # CW-[illegible], Computerworld,
Box 880, Framingham, MA 01701

EOE

---

[illegible]

---

## SOFTWARE PROFESSIONALS

[illegible]

RAND SYSTEMS CORPORATION

[illegible]

## RIGHT

RIGHT TIME • RIGHT PLACE • RIGHT MOVE

## SYSTEMS/ APPLICATIONS PROGRAMMERS & ANALYSTS

...to join Royal Insurance now in NYC and relocate with us to Charlotte, NC within the next 12 months.

Widen and enhance the scope of your professionalism while speeding your upward progress at this worldwide insurance leader whose plans include relocation to one of the Southeast's most desirable cities within the next 12 months.

By joining us now in New York City and moving later to our brand new sunbelt corporate center, you'll be working with one of the most sophisticated computer networks in operation anywhere. Using IBM systems at our regional and territorial offices, tied into our IBM 3084 mainframe, enables us to bridge the input and retrieval function. Enhanced by using terminals and TSO at the host site, you'll be working with the newest, most exciting high technology systems.

To qualify for these diversified challenges in a multi-project environment, you should be experienced in one or more of the following: COBOL, Assembler, MVS-XA, JES2, ACF-2, TSO, IMS DB/DC, SMP, CICS or VTAM. Insurance background is not required.

Salaries are excellent, benefits full ranging and our comprehensive relocation package will provide many extras for you and your family. For prompt, confidential consideration, forward your resume with salary history and requirements, to:

Mary Ann Wilson

**Royal Insurance**
150 William Street, New York, NY 10038
An equal opportunity employer M/F

---

## SOFTWARE ENGINEERS

Cray Research is looking for a small number of highly talented and motivated Software Engineers to work in a research environment in support of the development of a new generation of supercomputers. The challenge is software design for high performance parallel processing systems and includes:

### MODELING, SIMULATION & MEASUREMENT; LANGUAGE AND COMPILER DEVELOPMENT; UNIX*-BASED OPERATING SYSTEMS.

If you are an experienced UNIX/C programmer, have large mainframe operating system design experience or have been heavily involved in compiler design and implementation then we wish to talk to you about a rewarding opportunity with Cray Research. Escape to Wisconsin and join a growing high tech community on the shores of Lake Wissota. Please send your resume and salary history in confidence to: T. Jeffery Crosby, CRAY RESEARCH, INC., Dept. CW-[illegible], Highway 178 North, Chippewa Falls, WI 54729. An Equal Opportunity Employer M/F/H/V. No Agencies Please.

*UNIX is a trademark of AT&T Technologies.

CRAY

---

## DEC VAX & PDP ALL FEE PAID NC, SC, VA, TN

If you have DEC experience, and are seeking progressive, innovative firms to further your career path, call TODAY! I am representing [illegible] clients with opportunities ranging from programmer analyst to systems programmer with salaries of [illegible]-$40K. Call the DEC Specialist:

SHERRY LEA
PERSONNEL PLACEMENT, INC.
P.O. BOX [illegible]
BURLINGTON, NC 27216-[illegible]
(919) [illegible]

---

## CUSTOMER S/W SUPPORT

Leading S/W development company has 2 immediate openings in our Customer Support Department. [illegible]

- [illegible]
- [illegible]

MCBA package experience a plus.

Rush resume to:

MCBA
2441 Honolulu Avenue
Montrose, CA 91020
[illegible]

---

## Programmer, Engineering & Scientific

Design, implement Distributed Database Mgmt. System for scientific, business, technical data for computer network. Convert technical problem formulations to format processable by computer. Uses "C", Assembly languages in UNIX environment. 40 hrs./wk., $31,200/yr. M.S. in computer science req'd. Resumes invited. Contact nearest Job Service Center, refer to job order # CO[illegible].

---

## MANAGER

GROWING national data processing firm seeking PROFESSIONAL manager to direct major branch office (33 employees) in Phoenix Arizona. MARKETING success a must. Compensation base substantial, plus bonus. Send brief resume or letter for confidential interview to:

Management Resources
P.O. Box [illegible]
Phoenix, AZ [illegible]

---

## Lachman Associates Inc.

## JOIN A COMPANY ON THE MOVE!

LAI is a growing systems software development and consulting firm that can use your talents in the UNIX, C, UTS, NMS, and Networking! Opportunities in New Jersey, Columbus, Chicago, Denver, and world wide. Benefits include paid vacation, health insurance, profit sharing, and others. For further information, please contact:

Lachman Associates, Inc.
Staffing-CF
645 Blackhawk Drive
Westmont, IL 60559
1-800-L•A•I-U•N•I•X
(312) [illegible]

---

CESSNA AIRCRAFT COMPANY. A state-of-the-art computer facility seeks individuals with 3-5 years of programming and online systems experience. Knowledge of COBOL, VSAM, command level CICS and JCL is required. ROSCOE, TOTAL, IMS or IDMS are preferred. Ability to work well with user and operations personnel. Duties will involve program maintenance, working with users in designing new systems, conversions of existing systems to use new DBMS, and participation in team effort to implement MRPII, G/L, and HRS software.

We are currently running on IBM 3083, 4341 under OS/MVS and CICS supporting a network of over 600 terminals.

If you have the necessary background and would like to be affiliated with a company providing excellent compensation, benefits and growth opportunities, then send your resume and salary requirements to:

Cessna Aircraft Company
P.O. Box 232, Dept. KWT
Wichita, KS 67201
An Equal Opportunity Employer

Cessna

---

## INSURANCE SOFTWARE SALES

Property/casualty insurance software leader seeks a degreed software sales professional.

A willingness to travel extensively plus a minimum of two years successful software sales experience, preferably in property/casualty insurance, will qualify you for this highly-paid, ground-floor opportunity.

If you have above-average energy and drive, and are able to close a sale, please reply in writing to James W. Mitchell, Vice President-Personnel or call (414) 458-8131.

HERITAGE COMPUTER CORPORATION
[illegible] South Taylor Drive • Sheboygan, WI 53081

---

## New England, Westchester & NY Metropolitan Area

[illegible]

---

## COMPUTER ENGINEERS

Rapidly expanding computer service firm is in urgent need of competent, skilled engineers with [illegible] training.

Please send resume to:

[illegible], Limited
[illegible] Road
Carol Stream, IL [illegible]

Excellent salary and advancement opportunities.

---

## NEW YORK, NEW JERSEY SALARIED JOBS [illegible]

[illegible]

# WHERE TECHNOLOGIES EMERGE

*Northrop Advanced Systems Division is advancing aviation into the 21st century by successfully interfacing human creativity with powerful sophisticated computer systems. Here, utilizing the latest equipment and techniques, teams of engineers develop technologies for a variety of vital defense programs, including the R&D of advanced bomber concept studies for the U.S. Air Force.*

*Ideally located midway between Los Angeles and Orange County in Southern California, our modern facilities offer these immediate opportunities for career advancement:*

## *VAX/VMS Systems Programmers*

Experienced VAX 11/780 Systems Programmers to develop a compiler system for high technology in real and non-real-time applications.

## *Avionics Systems Analysts*

Develop and perform computer-based 6 degrees-of-freedom dynamic simulations to define the integrated weapons system performance in areas such as navigation flight path control, terrain following/avoidance, and weapons delivery. Using simulations and analyses, will develop baseline and tolerance-limited performance capabilities of airborne weapons systems equipped with sophisticated digitally-controlled avionics.

## *Software Design Engineers*

Requires knowledge of assembly and high order languages (FORTRAN, JOVIAL desired), familiarity with military specification and software documentation requirements, and experience with real-time programming.

## *Weapons Systems Software*

Create software for advanced weapons systems. Requires experience in computer programming, preferably C language programming, UNIX operating system and Graphics (core/GKS).

## *Software Supportability Engineers*

Enforce supportability standards for software development involving the application of scientific and mathematical algorithm.

The above positions vary in requirements of 3 to 15 years' experience and degrees in related engineering disciplines.

## *Flight Simulation Systems Programmers*

Provide software support for real-time pilot-in-the-loop simulations, and develop and maintain operating system software for multi-CPU Harris, DEC 11-44 RSX-11, Intel microprocessor and MC68000-based UNIX systems. You'll evaluate system specifications and interface with vendors. Requires at least 5 years' experience with Assembly, FORTRAN and C languages, BS or MS in CS or related, knowledge of interrupt driven multiprocessing system and high-speed graphics. Experience in a detailed system internals level is preferred, as is FPS array processors, Adage, IMI and Megatek graphics, and Intel microprocessors.

## *Flight Simulation Programmers*

Provide software programming support for real-time pilot-in-the-loop simulations of avionics and flight control systems. Will design, program, validate, maintain, operate and document aircraft and aircraft systems programs. Requires at least 5 years of experience in scientific programming, BS or MS in CS or EE, and FORTRAN 77 and/or assembly programming. Experience with Harris, Intel, IMI or Megatek computers desirable.

***Relocation assistance is available.***

The involvement, scope and dimension of these career pursuits are further heightened through some of the most tangible, comprehensive personal benefit arrangements available. Please send your resume to: Steven Martin, Northrop Advanced Systems Division, Employment Office, Dept. CW 637, P.O. Box 1138, Pico Rivera, CA 90660-[illegible].

PROOF OF U.S. CITIZENSHIP REQUIRED. Northrop is an Equal Opportunity Employer M/F/H/V.

**NORTHROP**

**Advanced Systems Division**
Aircraft Group

*We're within your reach.*

---

**[illegible]**

[illegible]

We don't require an obligation and we never charge a fee. All resumes are held in strictest confidence.

To get an update on current trends, salary ranges and employment opportunities now available in your [illegible], send your resume to:

[illegible]
1-800-[illegible] (Collect)

---

## $[illegible]
## [illegible] SPECIALISTS

2 IMMEDIATE positions for IBM [illegible] [illegible]

FEE PAID

[illegible]
522 Fifth Avenue
New York, N.Y. 10036
212-221-[illegible] (agency)

---

## UNIX*/C

**$25,000 to $60,000**
**APPLICATIONS & SYSTEMS**
National Placement Leader
For UNIX/C PROF'Ls
800 OPENINGS NATIONWIDE
Call or send resume
**J. ROGERS ASSOC**
NJ (609) [illegible]
out of state 800-[illegible]
100 Franklin Corner Rd-Dept C-9
Lawrenceville, NJ 08648
*UNIX is a trademark of Bell Labs

---

## MICHIGAN

Our economy is BOOMING. Multiple openings in state-of-the-art DP shops. We are looking for Project Leaders, Systems Analysts, Programmers, Systems Programmers and Software Engineers. BAL, MVS, CICS, IMS, DB/DC, Assembler, COBOL, PL/I, FORTRAN. Top salaries, benefits, and relocation. Call or send resume to EDP Specialist: J. [illegible]

**Selective Recruiting**
3001 South State St.
Ann Arbor, MI 48104
(313) 994-5632

---

## IMS, CICS & IDMS
## TO $[illegible]

Fox-Morris specializes in the placement of programmers and systems analysts who have database or CICS experience. You will receive prompt and courteous attention concerning your career path. #1 employment counselor exclusively with database and CICS. Client companies pay all employment costs, including relocation. Contact Robert Montgomery at (919) 872-2940.

3101 Poplarwood Court
P.O. Box 40128
Raleigh, NC 27629
**FOX-MORRIS**

---

## INFORMATION PROCESSING PROFESSIONALS

The Dutchess County Office of Computer Information Systems has career opportunities at various levels for managerial and technical professionals. Immediate openings for highly motivated candidates exist in the following areas:

- Systems Research Specialist
- User Services Administrator
- Micro Computer/Word Processing Support Assistants
- Computer Research Clerk
- Systems Analysts
- Programmer Analyst

Several years of experience are requested in one or more of the following areas: IBM Assembler, Cobol, CICS, performance tuning. Good oral and written communications are highly desirable. Environment consists of a 4341 operating under VM/CMS and DOS/VSE with CICS, DL/1, [illegible], VSAM, [illegible], Jasper, Cobol, Data Analyzer and [illegible]. Offering a competitive salary and excellent benefits package including participation in the NYS retirement system. Located in the beautiful Hudson Valley with many recreational, social and cultural advantages. Less than 1½ hours by car and 2 hours by train or bus from mid-town Manhattan. For immediate consideration, career oriented, self-motivated individuals seeking a challenge should send a resume (with cover letter indicating position of interest to you) with salary history in confidence to: Dutchess County Personnel Department, 22 Market Street, Poughkeepsie, NY 12601.

DUTCHESS COUNTY IS AN EEO/AA EMPLOYER

---

## DATA PROCESSING PROGRAMMING INSTRUCTOR

Indian Hills Community College has an opening for a Data Processing Programming Instructor. Associate's degree preferred with 3 years minimum experience required in data processing. Prefer knowledge in CICS, [illegible], BAL, COBOL and PL/1 and DL/1 and data base management. 4 term contract. Send letter of application and resume to:

Jim [illegible]
Personnel Office
**INDIAN HILLS COMMUNITY COLLEGE**
Grandview and Elm
Ottumwa, Iowa 52501
(515) 683-5126 (M-Th);
(515) 684-[illegible] (Eve. & Weekends)
EOE

---

## COMPUTER PROFESSIONALS

Challenging opportunities are available in our modern computer center [illegible]. New positions are available for enhancements to our On-Line Data Base system in a Sperry 1100/72 environment utilizing state-of-the-art hardware and software. We are seeking motivated candidates with Sperry 1100 experience.

**DATA BASE ADMINISTRATOR**

Responsible for DMS 1100 generation maintenance and all Data Base monitoring.

**APPLICATIONS PROGRAMMERS**

To work in a TIP/[illegible] environment. COBOL experience desired.

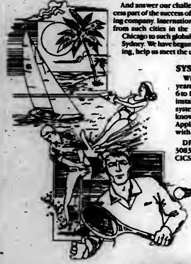
REQUIREMENTS: B.A. & 4 years experience or equivalent in experience and training. Positions offer opportunity for advancement and excellent benefits package with 1 month vacation after 1 year. Send resume to:

NEW YORK CITY FIRE DEPARTMENT
[illegible]
250 Livingston Street, 7th floor,
Brooklyn, N.Y. 11201-[illegible]
Equal Opportunity Employer M/F/H

# A Sunbelt Lifestyle and the Challenge of Growth

## *For Systems Programmers*

Live in one of the country's most growing cities. Sailing and other water sports is one way to spend your time. Golf, year-round on our famous courses. Play on the smooth sand of our beaches.



And answer our challenge. Make your professional success part of the success of the Southeast's largest bank holding company. Internationally our corporate offices spread from such cities in the U.S. as New York, Orlando and Chicago to such global cities as London, Hong Kong, and Sydney. We have begun the march toward interstate banking, help us meet the challenge of our future.

### SYSTEMS PROGRAMMER

With a college degree and 3 to 4 years experience or, without a degree, 6 to 10 years experience. You would be installing and maintaining operating systems software. A strong working knowledge of MVS-JES 3 is needed. Applicants should have experience with CICS, MVS/XA, IMS.

DP Environment includes: IBM 3083 and 3033; MVS SP, JES 3, TSO, CICS, VTAM.

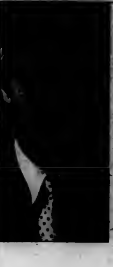
If you believe your skills can meet our needs...if your goals for success match our own... if you prefer the enriching quality of life our area can give: Contact us. Write or call Cathy Jarvi, Personnel Manager NCNB Personnel Division, COI-3, P.O. Box 25900, Tampa, Florida 33630 (813) 887-1157

**NCNB Corporation**

Equal Opportunity Employer M/F/H

---

"I always said we couldn't replace Higgins in a million years . . ."



Try two weeks.

Call ROMAC®. Because if you can't afford the time, the hassle, or a less than Higgins replacement, you can't afford not to call ROMAC®.

We specialize in computer technology, corporate accounting, public accounting, finance and banking. And we can find "Higgins" a lot quicker than you can count to a million.

**ROMAC**

Call your local ROMAC® office or call our corporate office, [illegible]

[illegible]

---

# Programmer/Analysts

We are seeking Programmer/Analysts to aid in the development and integration of an automatic flight scheduling system for the U.S. Air Force.

Positions will initially be located at our project for the Jet Propulsion Laboratory in Pasadena, California. Upon completion of development efforts, personnel will be reassigned to the Pacific Northwest for the operational test and evaluation phase of the program.

Selected individuals will interface with customer and military personnel during the development, test and evaluation of the Distributed Management Information Control System (DMICS) for the Military Airlift Command.

Candidates should have at least a Bachelors degree in Computer Science or a related discipline, and a minimum of 5 years' experience in real-time scientific programming, as well as knowledge of PASCAL, MIDOS and Database Management Techniques. Experience networking IBM XTs is desired.

We offer a unique and challenging work environment and an excellent salary and benefits package, including a tax deferred option savings plan.

For consideration, please send resume including salary history to: Mr. James Langel, ITT Federal Electric Corporation, Suite 201, 2600 E. Foothill Blvd., Pasadena, CA 91107

U.S. Citizenship required.
An Equal Opportunity Employer, M/F

**ITT Federal Electric Corporation**

---

SUMMER ON THE COAST OF

## NEW ENGLAND

$25 - 45K

IBM, DEC, Honeywell. We have needs for Programmers, Programmer Analysts, Systems Analysts, and M.I.S. Managers. All current needs, please call or write:

Executive Search of N.E., Inc.
P.O. Box 7082
Portland, ME 04112
(207) 773-4877

---

## NH - MAINE
### DP PROFESSIONALS

We have numerous clients seeking qualified people with experience in COBOL, RPG, DOS, OS or DBMS. Financial and manufacturing applications. All vendors considered. Excellent salary, benefits and relocation plans.

Fee paid. Reply in confidence to:

[illegible] AND SEYMOUR
[illegible]
232 Auburn St. • Portland, Me. 04103

---

### SENIOR PROGRAMMER

Senior Programmer, Steel Manufacturing, Sunbelt location. Heavy experience with DEC PDP 11/23 & 73, RSX 11M plus operating system, FORTRAN, B.S. Degree required. Experience with A/B PLC & PLC3 a plus. Excellent opportunity in an aggressive CIM development program. Good salary. Equal Opportunity Employer

Reply to Box #CW-[illegible]
Computerworld
P.O. Box 880
Framingham, MA 01701

---

# NEW ENGLAND

**BOSTON**
**IMS DBA**

Fortune 500 firm seeks tech. astute DBA to provide database leadership. Environ. is multi-CPU IBM MVS-DBDC. Oppty. to capitalize on IMS skills in hi-visibility corp. group. $48,000.

**BOSTON**
**EDP AUDIT SR.**

Internat. mfr. based in BOSTON seeks tech. astute audit pro w/ sound IBM COBOL & audit sw pkg. expertise. Position involves 50% internat. trvl. to conduct projs. at remote sites. Unique oppty. w/small but high visibility team. $40,000.

**BOSTON**
**HP3000 PROGRAMMER ANALYST**

Growing specialty mfg. firm seeks a tech. astute P/A to help develop fin'l. & mfg. appl. Environ. is HP3000 COBOL IMAGE COGNOS pkgs. Oppty. to join sm. prof. group doing mostly new devel. $29,000.

**HARTFORD**
**MIS MANAGER**

Exciting oppty. for career minded indiv. to assume #1 position in good sized S/36 D.P. dept. Hi-visibility & growth potential, great reloc. pkg. $50,000.

**HARTFORD**
**SYS/ANALYST-PROJ. LEADERS**

Strong bkgrd. in mfg. sys. & IMS DB or DC qualifies for growth positions w/hi tech mfr. w/multi U.S. locations. These are exclusive oppty's. Client offers full reloc. Salary $32-$42,000.

**PROVIDENCE**
**CICS**
**PROGRAMMER**

Rapidly growing fin'l. institution w/extensive online network seeks min. 2+ yrs. CICS (macro-lvl.) programming exp. Prof. should have ability to work independently & be a self-starter. $30,000.

## ROBERT HALF

**EDP PERSONNEL SPECIALISTS**

Contact the Manager of any office listed below.

100 Summer St., Boston, MA 02110
(617) 423-1200
111 Pearl St., Hartford, CT 06103
(203) 278-7170
900 Turks Head Bldg., Providence, RI 02903
(401) 274-8700

Client Companies Assume All Fees.

## Why should a Systems Programmer join Central and South West?

Because CSW provides an environment where your success is guaranteed, if:

- You enjoy working toward not-so-common objectives in a team environment but also enjoy planning and doing your own work
- You seek the opportunity to apply your knowledge
- You are motivated by your own professional 'pressure' to do a job well.

Currently, opportunities are available for persons to apply CICS experience and for persons to apply MVS/XA knowledge and/or experience as we move toward XA.

- **Senior Systems Software Analyst—MVS**
  Will plan and implement MVS/XA conversion. Will also provide technical support for MVS/SP including installation, maintenance and problem determination. Could support VM and VSE
- **System Software Analyst—MVS**
  Will assist in installation, maintenance and problem determination of MVS/SP. Will assist in conversion activity for MVS/XA.
- **Senior System Software Analyst—CICS**
  Will provide primary support for planning and implementing CICS and evaluating system performance. Will direct and monitor the work of others.

Our environment includes Amdahl 470 V8's and 580 with MVS, VM, VSE, JES2, TSO/ISPF, ACF2, MSI, CICS, SMP, DPF and ROSCOE

For immediate consideration, please send your resume and salary requirements to the Employee Relations Department. Principals only.

**Central and South West Corporation**
P.O. Box 220164 • Dallas, Texas 75222

Central and South West Corporation is one of the nation's leading electric utility systems, having annual revenues of more than $2 billion. With corporate headquarters in Dallas, CSW serves more than four million people through its operating companies in Texas, Oklahoma, Arkansas and Louisiana.

Equal Opportunity Employer

---

## EMPLOYMENT SERVICE FOR PROGRAMMERS AND ANALYSTS SOFTWARE AND HARDWARE ENGINEERS

Tens of thousands of career opportunities nationally with over 1000 client companies and through cooperation with over 200 employment affiliates. Member of National Personnel Associates, National Association of Personnel Consultants and Middle Atlantic Association of Personnel Consultants. Serving computer professionals since 1966. Client companies pay all fees. No obligation to you. No sales pressure from us. We guide. You decide.

SCIENTIFIC AND COMMERCIAL APPLICATIONS • SOFTWARE DEVELOPMENT AND SYSTEMS PROGRAMMING • COMPUTER ORIENTED MARKETING AND SUPPORT:

• realtime systems • communications, networks and distributed processing • controls • military and aerospace • artificial intelligence and expert systems • robotics • computer vision • pattern recognition and image processing • graphics • factory automation • cad/cam • signal processing • acoustics • digital filtering • operating systems • compilers, assemblers and interpreters • data base systems • fourth generation languages • software tools • firmware and microprogramming • diagnostics • automated laboratory • biomedical • instrumentation • computer architecture • embedded microcomputer systems • office automation • work stations • computerized typesetting • manufacturing, financial and commercial applications • automatic test equipment • software testing, verification and quality assurance • configuration management • performance monitoring ... and many more

Services offered only to degreed U.S. citizens and permanent residents with two-years minimum professional work experience (or PhD). Send resume or rough notes of job objective, current and desired salary, location restrictions, education and experience (including computers, models, operating systems, languages and special software) to either one of our locations. Or call toll free from outside NJ 800-222-0153 or from within NJ 609-667-4488 or 201-526-9630.

RSVP SERVICES, Dept. C1
Suite 700, One Cherry Hill Mall
Cherry Hill, New Jersey 08002

RSVP SERVICES, Dept. C1
Suite 211, Dublin Hall
1777 Walton Road
Blue Bell, Pennsylvania 19422

**RSVP SERVICES**
*Employment Agents for Computer Professionals*

---

## INSTITUTE OF SYSTEMS SCIENCE NATIONAL UNIVERSITY OF SINGAPORE

We require Teaching and Development staff in the following areas:

- **Information Resource Management**
- **Project Management**
- **Systems Development Methodologies**
- **Data Base Management Systems**
- **Data Communications**
- **Office Automation**
- **Microcomputer-based Information Systems**
- **Local Area Networks**

### THE JOB

You will be working in small teams to develop short intensive courses aimed at upgrading the skills of executives, users, I/S managers and I/S professionals from organizations in Singapore and South East Asia. You will also participate in teaching a Diploma in Systems Analysis. In addition you will have opportunities to engage in consultancy and applied research.

ISS provides a stimulating environment for state-of-the-art practitioners from a variety of backgrounds to interact and develop through close teamwork.

### THE INSTITUTE

Established in 1981 by the Singapore government, ISS is focused on promoting the rapid development of leading edge computerization both in the public and private sectors, and participating in the development of Singapore as a regional center for software development and services. Technical leadership is exerted through quality management education, advanced technical training, consulting services and applied research. ISS has excellent educational and computer facilities.

### SINGAPORE

Singapore is well known as a commercial, financial, industrial and communications center in South East Asia. Vigorous economic growth persists, and it has the second highest per capita income in Asia after Japan. American and British expatriates have consistently rated Singapore as one of their top 3 overseas postings.

### APPLICANTS

Applicants should have a strong practical background in at least one of the areas mentioned and be motivated towards a job involving a substantial portion of development and teaching of leading edge material.

Applicants for positions at a more junior level are likely to have 3 - 6 years of experience.

### COMPENSATION

Salary (to US$60,000/year) is commensurate with experience. Benefits include an additional 25% Provident Fund contribution, heavily subsidised housing, medical and leave benefits, passage assistance and baggage allowance, settling-in allowance and children's education allowance.

Application forms and further information on conditions of service may be obtained from:

**The Director**
**Personnel Department**
**National University of Singapore**
**Kent Ridge**
**Singapore 0511**

**Mr. Peter Lim**
**Director, North America Office**
**National University of Singapore**
**780 Third Avenue, Suite 2403**
**New York, NY 10017, U.S.A.**
**Tel: (212) 751-0331**

---

New US Openings

SOFTWARE ENGINEERS, SYSTEMS ANALYSTS, PROGRAMMERS, $[illegible]-$[illegible]. [illegible] available in PA & nationwide. We have been placing DP professionals for over 20 years. All fees paid by client companies. Reply in strict confidence to [illegible], V.P., [illegible] PERSONNEL SERVICES, INC., Box [illegible], [illegible], PA [illegible] ([illegible]).

DATA PROCESSING OPPORTUNITIES in Florida and throughout U.S. Companies assume fees. All resumes answered. Response and confidentiality guaranteed. Contact [illegible], PROFESSIONAL PERSONNEL CONSULTANTS, P.O. BOX [illegible], Tampa, FL [illegible] ([illegible]).

npo NATIONAL PERSONNEL CONSULTANTS

---

### COMPUTER SCIENCE INSTRUCTOR

Teach college level computer science and computer applications (Management Information Systems, business application of computers and computer software). Masters Degree required. Send letter of application, vita and name of three references by June 10, 1985 to

Dr. Arthur L. Olsen,
Provost

Augustana College
Sioux Falls, South Dakota 57197

EEO/AA Employer

---

### PRIME 500 FORTRAN TO $35,000

Multi-faceted responsibilities and challenges at Twin Cities area mfr; dealing with vendors and engineering staff. [illegible] package [illegible] enhancement of billings and [illegible] analysis modules. New ones upcoming in inventory and parts tracking. Opportunity for supervision shortly. Requires 3+ yrs PRIME and FORTRAN. Call [illegible] or [illegible] at (612) [illegible].

[illegible]
[illegible]
3300 IDS Center
Minneapolis, MN 55402

## IMMEDIATE OPENINGS
for
## COMPUTER SYSTEMS PROGRAMMERS (DATA BASE SPECIALISTS)
with the
## U.S. NAVY FLEET MATERIAL SUPPORT OFFICE
## Mechanicsburg, PA

Computer Systems Programmer positions are at the GS-9, GS-11, and GS-12 levels, with starting salaries ranging from $21,804 to $41,105.

Applicants for GS-9 must possess a background which includes 1 year of work in a GS-7 or equivalent level position which demonstrates a knowledge of computer requirements and techniques in carrying out project assignments consisting of several related tasks. Applicants for GS-11 must possess a background which includes 1 year of work in a GS-9 or equivalent level position which demonstrates accomplishment of computer project assignments that require a range of knowledges of computer requirements and techniques. Applicants for GS-12 must possess a background which includes 1 year of work in a GS-11 or equivalent level position which demonstrates accomplishment of computer project assignments that require a wide range of knowledges of computer requirements and techniques. At all grade levels the background and experience must demonstrate: (a) proficiency in the use of a particular assembly level programming language (e.g., ALC), (b) Knowledge of general techniques for analysis of system software requirements, and (c) skill in development and implementation of specifications for system software programs.

In addition to the above, all applicants must have experience in Integrated Database Management System (IDMS) or other CODASYL-style database management system such as IDS/II, DMS/1100, DBMS/10, EDMS.

Applicants must file a seperate application for each grade level for which they wish to be considered.

Application forms (SF 171, Personal Qualifications Statement) are available at the Federal Job Information Center nearest you. These centers are listed in your local telephone directory under U. S. Government, Office of Personnel Management. Completed applications must be received at the following address no later than June 19, 1985.

**OFFICE OF PERSONNEL MANAGEMENT**
**PITTSBURGH AREA OFFICE**
**FEDERAL BUILDING, 1000 LIBERTY AVENUE**
**PITTSBURGH, PA 15222**

**U.S. CITIZENSHIP REQUIRED**

**AN EQUAL OPPORTUNITY EMPLOYER**

---

GM **General Motors Research Laboratories**

### COMPUTER SCIENCE DEPARTMENT
has current openings for
### RESEARCH AND DEVELOPMENT in DISTRIBUTED DATABASE SYSTEMS

For candidates with

- Experience in IMS or IDMS/R at the application and/or system level
- Knowledge and/or experience in databases, compilers, and operating systems
- System programming experience preferably in the C language

If you have an MS in Computer Science or equivalent experience and are interested in distributed database research, please send your resume to: Dr. George G. Dodd, Head, Computer Science Department, General Motors Research Laboratories, Warren, Michigan, 48090-9057. (313) 575-3101.

Candidates must have citizenship or visa status which permits them legally to accept permanent employment under U.S. Immigration Laws.

*An Equal Opportunity Employer*

---

## Programmer/Analyst

Immediate opening at headquarters of national contractor for Programmer/Analyst with experience in analysis, design, and implementation of production/financial applications. Requirements include at least three years experience in Fortran 66 and analysis skills. Experience within a PRIME hardware environment preferred. Reply in confidence to Human Resources Manager, CW-84644, Computerworld, Box 880, Framingham, MA 01701

---

### - GULFCOAST CAREERS -

[illegible]

- [illegible]

BASON'S, [illegible]
[illegible], Baton Rouge, La. [illegible]
[illegible]

---

### DP MANAGER
### RETAIL
### TO [illegible]

[illegible]

[illegible]
[illegible]
IDS Center
Minneapolis, MN [illegible]

---

# HP-3000

**MANAGER, DATA PROCESSING MANUFACTURING SYSTEMS**

Fortune [illegible] employer located in upstate NY seeks qualified candidates to manage their DP efforts in manufacturing systems. HP 3000 and manufacturing systems/programming are the main qualities for consideration. 2-3 years experience minimum. Respond in confidence to

**KMS ASSOCIATES, INC.**
**P.O. Box 3462**
**Kingston, NY 12401**
**914/339-3660**

---

# WE'LL MATCH YOUR SALARY. RAISE IT. AND, GIVE YOU TIME AND A HALF FOR OVERTIME.

CGA Computer, Inc. knows top-notch programmers and analysts are a sure bet to the success of our national contract consulting business. So we up the ante in salaries and benefits to get the qualified consultants we need to satisfy our consulting contracts.

• Paid vacations and holidays • Health and life insurance • Dental insurance • 401(k) plan • Between project pay • Merit reviews • Technical challenge • Professional growth • Constant up-grading of skills • Excellent salaries • Superior benefits . . .

Don't gamble with your career. Deal yourself a winning hand with CGA. Call us today 800-543-7583. In Ohio, call collect 513-890-1200. (SUBCONTRACTORS WELCOME)

**CGA COMPUTER, INC.**
**212 West National Rd., Vandalia, OH 45377**

---

## INFORMATION CENTER SPECIALIST

To instruct users of Hewlett-Packard HP300; assist with development/purchase of software; implement software and communicate with vendors/developers of software; interface with operations and assist with software installation as needed. B.S. degree in Computer Science; System Analysis or an equivalent major; formal courses from Hewlett-Packard for the HP300 computer in system management and the IMAGE data base management system; at least one year of design, installation, and maintenance of general commercial applications including some IMAGE data base design and management. Salary range is $22,700 - $29,000. Send resumes to:

**Texas Municipal Power Agency**
Personnel Department
P.O. Box 7000
Bryan, Texas 77805

*TMPA is an Equal Opportunity/Affirmative Action Employer*

---

### COMPUTER SCIENCE FACULTY

Computer Science Faculty, [illegible] teaching position for Fall 1985.

[illegible] Master's in Computer Science required. [illegible]

[illegible] Lock Haven University, Lock Haven, PA 17745.

Applications accepted until position filled.

*An Equal Opportunity Employer*

---

### CAPACITY PLANNER

The Administrative Data Processing Center of Purdue University is searching for a Capacity [illegible] West Lafayette, IN 47907. (317) [illegible]

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

## GEARHART INDUSTRIES

[illegible]

Gearhart Industries, Inc. is internationally known for providing oil well evaluation equipment and services. Headquartered in Fort Worth, Texas, we have a workforce of over 5,500 and operations in several countries. We attribute our rapid growth to the hard work and talent of our employees and structure our positions to reward quality performance. If you are interested in working for a company which promotes and develops career opportunities for professionals, consider the openings we now have available for degreed individuals in our Information Systems group:

- **SYSTEMS PROGRAMMER IMS**
  Will be responsible for IMS/DB installation and maintenance, data base generations, tuning, and space management. CICS, VTAM, and NCP experience desirable.
- **PROGRAMMER ANALYST**
  Requires proven technical skills in COBOL, TSO/SPF, and OS/JCL. Experience in DL1 and CICS would be a plus.

Our computing environment consists of an IBM 3081, MVS/XA, IMS/DB, CICS, and a nationwide teleprocessing network.

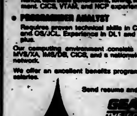
We offer an excellent benefits program and competitive salaries.

Send resume and salary history to:

**GEARHART**
**THE GO COMPANY**

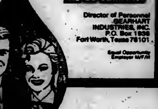
Director of Personnel
GEARHART
INDUSTRIES, INC.
P.O. Box 1936
Fort Worth, Texas 76101

Equal Opportunity Employer M/F/H



---

**APR**



## The Key For Data Processing Professionals Seeking Growth

Advanced Programming Resources, Inc., a dynamic, growth-oriented contract services organization, is searching for a seasoned professional, due to Corporate growth.

## Manager of High Technology Systems Services

This individual will interface heavily with software engineers, clients and provide ongoing support to our marketing staff.

This position requires a strong and versatile manager with above average technical abilities, educational credentials and a solid work history in the communications industry.

APR provides an excellent salary (commensurate with years of experience and education) along with fully paid company benefits. If you feel you want to join the leader, please call and/or send your resume in confidence, to: Executive Vice President, Advanced Programming Resources, Inc., 5880 North High Street, Columbus, Ohio 43085, 614-888-3968. An equal opportunity employer, m/f.

**APR**
**ADVANCED PROGRAMMING RESOURCES, INC.**

---

## TAKE A LOOK AT SUCCESS

at Fireman's Fund American Life Company where product innovation and direct response techniques have made it one of the best, most aggressive life companies in the U.S.

Take a look at our location — Marin County, north of the Golden Gate Bridge — an acknowledged best choice of places in which to live and work and enjoy life. Take a look, too, at our state-of-the-art IBM 3081 MVS/XA environment which includes DB2, IMS, CICS and TSO. Projected enhancement plans are in keeping with the advanced equipment in place.

## SYSTEMS PROFESSIONALS

You'll step into the feel of success where you'll find a refreshing blend of a small company within a large prestigious corporation. We're proud of our dramatic increase in net income in 1984 and our dynamic momentum continues.

We're continually open to new systems solutions and breakthroughs and we'll provide you the creative latitude that stimulates success and accomplishment — and yet the next step in technical innovation. You'll have the opportunity to interact meaningfully with our customers and the option to move to the top in systems management.

Supported by the best in technological resources by our parent company, American Express, you'll find unique high visibility careers all located in the unmatched setting of Marin County.

## SR. PROJECT MANAGER

Directing the evolution of our complex data processing systems, you will ensure current requirements are met and that aggressive future growth is anticipated. This requires superior analytical ability since you must manage the design of practical EDP systems to satisfy/respond to business requirements. Follow-through includes organizing project teams and defining work plans to ensure timely project completion. A well-rounded knowledge of state-of-the-art data processing techniques/equipment is essential.

This high level challenge requires 12 years of extensive EDP systems analysis/design and programming experience, including 4 years of proven project management ability. Effective communication skills and ability to coordinate with other departments is key.

## METHODS ANALYSTS

As a major contributor to the development of innovative, flexible automated and manual procedures, your efforts will have a positive impact on system's quality, productivity and cost-effectiveness. Specific responsibilities include evaluating user needs and business requirements, charting work flows and exploring alternative approaches to current processing practices. Motivation is essential since you'll work independently and with others to meet deadlines. Educational background must include general business with emphasis on quantitative analysis, operations research, and/or industrial management. Your 4-6 years in business systems analysis must include a demonstrated knowledge of advanced analysis techniques, feasibility studies and project planning. Effective communication skills are a must.

## SYSTEMS ANALYSTS & PROGRAMMER ANALYSTS

Focusing on meeting the functional requirements of current and potential EDP systems users, you will research existing large and/or complex systems and procedures. Sound judgement is critical since your design and development decisions will have considerable economic and operational impact. After presenting your findings and recommendations, you will work with Project Managers to implement cost effective, computer-oriented solutions. This involves defining team tasks, setting priorities and advising junior technical personnel. Additionally, your follow through will ensure consistent, quality service once the systems are in place.

Candidates must have 2-3 years' analyst/programmer experience or 4-5 years of analysis or programming with another company. Your history of progressively responsible EDP positions, preferably in the insurance industry, must include demonstrated interpersonal skills and knowledge of systems definition, design, programming and implementation. Proficiency in CICS and COBOL, plus experience in an IMS/MVS environment required.

We offer an excellent salary and benefits package. For immediate consideration, please send resume with salary history to: Fireman's Fund American Life Company, Personnel Dept., LG2-EC, 1600 Los Gamos Road, San Rafael, CA 94911. An equal opportunity employer.

**FIREMAN'S FUND**
**INSURANCE COMPANIES**
An American Express Company

---

## INDIANA UNIVERSITY AT KOKOMO

Data Processing: The Division of Arts and Sciences invites applications for a tenure-track position in data processing starting in August, 1985 or January, 1986. [illegible]

*An Equal Opportunity/ Affirmative Action Employer.*

---

## SYSTEMS PROGRAMMER

**University of Wisconsin - Parkside**

We seek a Systems Programmer to help maintain an IBM 4341, DEC 11/70 and VAX 750 computer systems running VM/SP, RSTS/E and UNIX. Responsibilities include assisting in the generation and maintenance of operating systems, and [illegible] of a major system.

Desired qualifications include a Bachelor's degree, two or more years of programming background with CICS experience, and a desire to enter the systems programming field.

Starting salary depends upon experience and education. Advanced educational opportunities available.

UW-Parkside is a medium-size university in a pleasant suburban environment located in southeastern Wisconsin.

Send resume to: William [illegible], Director, Computer Center, University of Wisconsin-Parkside, Box 2000, Kenosha, WI 53141

*AN EQUAL OPPORTUNITY EMPLOYER*

---

## MAJOR APPLICATIONS EXPANSION PROGRAM

Tultex Corp., a major fleeced apparel manufacturer is seeking experienced EDP professionals for a major application systems expansion program.

Aggressive design and implementation schedule for new business and manufacturing systems. We require experienced:

- Systems Analysts
- Programmer Analysts
- Programmers

CICS/IDMS background helpful.

Challenging positions also available for IBM Systems Programmers and IDMS Data Base Analysts.

Excellent career potential and the beautiful Blue Ridge Mountains of Virginia combined to make this an opportunity you should explore! Please send resume to:

**TULTEX Corp.**
P.O. Box 5191
Martinsville, VA 24115
Attn: Manager DP Recruitment

# High-Potential Opportunities For MIS Professionals

## ... At COLECO Corporate Headquarters In The Heart Of New England

For over 50 years, COLECO has balanced business know-how and creativity to lead the way in new entertainment products for home and family. If you are an experienced MIS professional able to advance the aggressive growth strategies that will mark our second half-century, we would like you to consider the following immediate opportunities at our corporate headquarters in West Hartford, Connecticut.

## STATE-OF-THE-ART HONEYWELL ENVIRONMENT

**SENIOR SYSTEMS ANALYST/DISTRIBUTION SYSTEMS...** Interface with users to develop a worldwide distribution system in an on-line interactive environment – and plan future corporate systems needs in this area. Requires at least 5 years in project planning and in-depth knowledge of on-line interactive distribution or sales order processing systems. BSCS or equivalent required.

**SYSTEMS ANALYST/FINANCIAL SYSTEMS...** Design and implement on-line interactive financial systems. Requires 3-5 years financial systems design experience in an on-line interactive environment, preferably in a manufacturing organization. BSCS or equivalent required.

Coleco offers a competitive compensation and benefits package. If you're ready for professional challenge and rewards second to none, please forward your resume, indicating position of interest and salary requirements, in confidence, to: Joyce [illegible], Senior Recruiter.

COLECO

**COLECO INDUSTRIES, INC.**
Coleco Corporate Center
999 Quaker Lane South, West Hartford, CT 06110
*An Equal Opportunity Employer M/F*

---

# SR. PROGRAMMER ANALYSTS

ARISTAR, INC., a major financial services conglomerate, with offices throughout the U.S. has several current vacancies in our Miami headquarters for Sr. Programmer Analysts.

Qualified candidates must have a minimum of 5 years analyst experience to work at the highest level of all technical phases of applications systems analysis. The ability to interact effectively and provide guidance for the programming/analyst staff is necessary. Health insurance experience is highly desirable.

ARISTAR operates in a state-of-the-art IBM 3084 MVS/XA environment, offering competitive starting salaries and professional development.

If you wish to join a rapidly expanding organization with an outstanding benefits package including life, medical and dental insurance, 100% tuition reimbursement and savings programs, please send resume including salary history:

Human Resources, P. Wells
ARISTAR, INC.
P.O. Box [illegible],
Miami, FL 33102-[illegible]

ARISTAR

---

# FLORIDA

COMPUTERPEOPLE, a national data processing placement and contract services company is expanding in Florida with a new Ft. Lauderdale Office. Our growth and the continued need for qualified data processing personnel in Florida combines for outstanding opportunities for you. We will provide a knowledgeable approach to your career planning because our Placement Counselors are former D.P. Managers. If you are a CONTRACT PROGRAMMER, SYSTEMS PROGRAMMER, PROGRAMMER/ANALYST, SYSTEMS ANALYST, or PROJECT LEADER with a background in one or more of the following, we may have the opportunity you've been seeking:

- IBM
- Honeywell
- HP 3000
- Burroughs
- IMS
- IDMS
- CICS
- COBOL
- PL/1
- OS
- DOS
- IMAGE
- VIEW
- IDS
- NDL

Our broad client base provides state-of-the-art work environments, excellent compensation and benefits and the recreational advantages of Florida locations. For immediate consideration, contact:

**COMPUTERPEOPLE**

[illegible] Executive Center
Suite 1[illegible]
Tampa, FL 33614
(813) [illegible]-6135

[illegible] W. Cypress Creek Rd.
Suite 3
Ft. Lauderdale, FL 33309
(305) 771-[illegible]

---

# SINCE 1873...

E. C. Jordan Company has been building a solid reputation for professional excellence for the past 112 years. We are a diversified consulting engineering firm of national scope serving industrial, commercial and governmental clients.

## DATA PROCESSING MANAGER

We are looking for a talented professional to manage our present staff of programmers and operators and to participate in the implementation of a master plan to further automate our company. Responsibilities will include programming in RPG II and OCL and the configuration of hardware, software and communications requirements. In addition, you will provide scheduled and customized accounting, financial and management reports; analyze end-user requirements and provide for programming, training and documentation to satisfy these requirements.

Strong technical skills in RPG II and OCL programming are required. The successful candidate will have a B.S. in Accounting or Business with a minimum of 5 years' experience as a programmer/analyst. Supervisory experience in an IBM system 34/36 environment for a minimum of 2 years is also required.

**Individuals interested in the above opportunity should send resumes plus salary requirements, in confidence, to the Director of Personnel.**

E.C.JORDAN CO.
CONSULTING ENGINEERS
[illegible] CONGRESS STREET/P.O. BOX 7050
PORTLAND, MAINE 04112 (207) 775-[illegible]

AN EQUAL OPPORTUNITY EMPLOYER

---

### PROJECT LEADER
### IBM S/36
### TO MID-$30's

Leading Twin Cities area only-firm wants analyst to assume leadership role in enhancing and developing new systems. Challenging new opportunity to move from needs assessment to definition, design and implementation. Requires 3-5+ yrs in DP with 2+ yrs RPG II coding. Call Mark David or Tim Smith at (612) 339-[illegible].

[illegible]
3538 IDS Center
Minneapolis, MN 55402

---

### DATA PROCESSING INSTRUCTOR

Position vacancy for Fall 1985 at a 2 year Community College. Bachelor's Degree in Data Processing or related field required. Preference will be given to candidates with prior teaching experience, although applications from individuals with substantial industrial experience will also be considered. The ability to work well with students in an informal environment is also a plus. A VAX-11/750, operating under VAX/VMS 4.0, and [illegible] microcomputers are provided to support academic programs. Send letter of application, transcripts, current resume and at least three letters of reference to [illegible], Coordinator, Academic Computing Services, Bay de Noc Community College, Escanaba, MI 49829 no later than June 14, 1985. Equal Opportunity Employer.

---

Programmer/Analyst wanted for Airline Control Program (ACP) operating system and Passenger Airline Reservation System (PARS). Complex software and systems analysis, design, coding, testing and modification in International Fares application with objective of implementing the international pricing and ticketing functions. Long term research and development in field of International Fares. [illegible] Must have minimum two years ACP [illegible] job or four years ACP related job plus knowledge of International Tariffs and application of rules and fares. Must know Sabre TAO and Basic Assembler Language, and [illegible]. 40 hours/week, 7:30 AM - 4 PM. Salary $[illegible]. Send resume to Job Service Of Florida, Miami Downtown Civic Center, PO Box 49-1460, Miami, FL [illegible]-1460. Reference: Job Order # [illegible].

---

### POSITION AVAILABLE
### (COMPUTER TECHNICAL)
### PROGRAM DEVELOPMENT & SYSTEMS ANALYSIS

Annual salary range $16,[illegible] to $23,[illegible]. Commensurate with experience and training. Excellent employee fringe benefits package. Strongly interested in persons with undergraduate degree in computer science or a related area and EXTENSIVE professional work experience in systems level programming, design, and analysis. Some professional work experience with mini-computers. Submit resume to:

City of Little Rock
Department of Personnel
500 West Markham
Little Rock, AR 72201
(501) 371-[illegible]

---

### [illegible]

Data-Techniques, Inc., an Olympia, Washington based corporation dedicated to marketing, support and development of a vendor supported computer system for [illegible], is seeking candidates to fill several Programmer positions.

Experience requirements for these positions are:

- 3 IBM [illegible] Assembler - 3 years.
- 2 IBM PL/I - 2 years.
- 3 Advanced COBOL - 2 years.

Other [illegible] experience may substitute.

Starting annual salaries will range from $[illegible] to $[illegible] annually depending on experience.

Send resume to: [illegible], Data-Techniques, Inc., [illegible] E. 7th Ave., Olympia, WA [illegible].

---

# Don't trust us to keep your classified information secret

Every week, we deliver more of your target audience than anyone else. Over 600,000 computer-involved professionals. Including MIS/DP directors, systems analysts, programmers, and engineers – as well as corporate presidents, treasurers, and general managers.

And we deliver these readers for less. Compare costs and the people reached. You'll see that Computerworld is the number one medium for reaching MIS/DP professionals.

We make your ads work harder. Because we divide the classified section into logical categories: Position Announcements; Buy, Sell, Swap; Software For Sale; Time & Services; and The Bulletin Board. (Available on request: Software Wanted; Business Opportunities; and Real Estate).

We'll even typeset your ad at no extra charge. All you need to do is attach clean typewritten copy to your order. (Figure about 25 words per column inch, not including headlines). Or give us your order over the phone. We'll do the rest.

And since we're published weekly, we can offer you a fast turnaround from when you place your order to when your ad appears. As little as 10 days.

The next time you want results, advertise in Computerworld classified pages. Call toll-free at (800) 343-6474. In Massachusetts, call (617) 879-0700. Call now. COMPUTERWORLD, Box 880, 375 Cochituate Road, Framingham, MA 01701

# We're looking for a frustrated IDMS Data Base Administrator!

We're looking for the person who recognizes the power of IDMS as a software tool but is in an organization slow to utilize that power.

We are fully committed to IDMS. We have the latest in software — in fact, we were a Beta test site for IDMS Release 10.0.

Major new developments are underway and we need your IDMS expertise to support project teams in data base design.

Not only do we have full commitment to IDMS, we are also fully committed to training. Most importantly, our team environment affords the opportunity to apply your knowledge.

So, if you are ready for a positive change, let us know.

Please send your resume and salary requirements to the Employee Relations Department. Principals only.

**Central and South West Corporation**

P.O. Box 220164 • Dallas, Texas 75222

Central and South West Corporation is one of the nation's leading electric utility systems, having annual revenues of more than $2 billion. With corporate headquarters in Dallas, CSW serves more than four million people through its operating companies in Texas, Oklahoma, Arkansas and Louisiana.

Equal Opportunity Employer

---

# ATLANTA

## HEARTBEAT OF THE SOUTH!

CAP GEMINI DASD, an internationally established leader in the Data Processing Consulting field, has multiple openings in the Atlanta Branch Office for qualified candidates with experience in the following areas: Programmers, Programmer/Analysts, Systems Analysts, Project Leaders, and D.B.A.'s.

Qualified applicants will have experience in two or more of the following skills:

MVS or DOS/VSE
COBOL
RPG II/III
PL/1
CICS

IMS DB/DC
ADABAS
IDMS DB/DC
ADSO
ASSEMBLER
TANDEM

HONEYWELL
IBM SYS-34/36/38
BURROUGHS
UNIVAC
MAPICS

As a career-oriented company, we offer a comprehensive benefits program including paid overtime. If you have an interest in improving your career and lifestyle in the South's perfect climate, please call or submit your resume.

2900 Brandywine Road
Atlanta, GA 30341
(404) 455-9301

**CAP GEMINI DASD**
PEOPLE/PRODUCTS/RESULTS

---

Systems Integration Professionals

# EDS AND YOU
# The Meeting of Meaningful Minds
## Opportunities in Southeastern Michigan

The recent alliance between Electronic Data Systems Corporation (EDS) and General Motors has created unprecedented opportunities for a systems integration division. This division has been chartered to identify strategically-placed systems which have business involvement across General Motors functions and organizations, as well as to recommend and support appropriate development technologies and quality assurance standards for system implementation.

At EDS, we strive to find the very best people. And these individuals will be key to the success of this division. If you are results-oriented, EDS can provide unlimited growth, challenge and a highly professional work environment in Southeastern Michigan.

Candidate resumes are being accepted in the strictest confidence for the following positions:

## INTEGRATION MANAGEMENT

### Regional Manager, Integration Management
- 5+ years experience related to developing overall strategies related to design, implementation, and integration of complex application systems.

### Team Manager, Data Base Technology
- 4+ years experience in use and analysis of data base technologies

### Team Manager, Interface Technology
- 4+ years experience in analysis and specification of interfaces which must be controlled in integrated systems

### Systems Engineering Managers
- 4+ years experience in use of Data base technoligies or quality assurance techniques.

## DEVELOPMENT PLANNING

### Team Manager, Data/Business Analysis
- 4+ years experience in use of Data Entity analysis to define integrated systems

### Systems Engineering Manager
- 4+ years experience in use of Data Modeling, Relational Analysis and Data Base Design

## CONFIGURATION MANAGEMENT

### Team Manager, Configuration Management
- 4+ years experience in administration and management of systems changes control in a distributed environment

### Systems Engineering Manager
- 4+ years experience in use of data and systems libraries, directories, dictionaries

EDS offers unlimited career pathing to enhance your ultimate goal, with compensation, benefits and challenges to meet the aggressive expectations of your potential. We also have one of the most supportive relocation programs available to assist you in any move that may be required. EDS and YOU. The meeting of meaningful minds could be the best career combination for your future. Forward your resume in strict confidence to:

ELECTRONIC DATA SYSTEMS CORPORATION
755 West Big Beaver
Suite 310, Dept. 09-0520-07
Troy, MI 48084

**EDS**
Electronic Data Systems Corporation

An equal opportunity employer

---

CHICAGO AREA
**PROG/ANALYST**
1-800-782-3604 x529

Ready to step into project management within next year? Growth opportunity for someone with 3-5 years systems development background. Salary to $37,500. Call Carolyn Martin.

**Dunhill**
of Milwaukee
735 N. Water St.
Milwaukee, WI 53202
1-800-782-3604 x529

---

## SYSTEMS PROGRAMMER
UTAH STATE UNIVERSITY

Support CAD/CAM efforts using IBM 4341 computer running OS/MVS. Require: B.S. in CS or related experience. Demonstrated working knowledge of IBM BAL and FORTRAN programming languages. Prefer experience with CAD/CAM related software. Two years experience. Salary Range: [illegible] to [illegible]/year. 12 month contract position available July 1, 1985. Send resume and names of three references by July 1, 1985 to Personnel Office, UMC 16.

**UTAH STATE UNIVERSITY**
Logan, Utah 84322
An Affirmative Action/
Equal Opportunity Employer

---

**Management Consultants**

Nolan, Norton & Company, a leading management consulting firm, with offices in Boston, Chicago, San Francisco, London, and Milan has positions available for individuals with strong analytical, conceptual, and communications skills. We are interested in hiring Information Services professionals with 5-7 years experience in any of the following management disciplines:

- Data Resource Management,
- Telecommunications Management, or
- Data Center Management.

Successful candidates must have an understanding of the planning and economic issues related to these I/S management functions.

This is an exciting opportunity for candidates who are self starters, highly motivated, willing to travel, and enjoy the variety that consulting offers.

If you are interested in an extremely challenging career with a dynamic, growing company please forward your resume, in confidence to:

**Nolan, Norton & Company**
Box [illegible]
One Forbes Road
Lexington, MA 02173

An Equal Opportunity Employer

# INFORMATION SYSTEMS

The Corporate Information Systems Department of Millard Fillmore Hospitals is expanding and seeking additional professional and managerial staff members to assist with the development and support of advanced health care information services.

## Manager of Technical Support

The Manager of Technical Support is responsible for systems programming, data base management software, data communications including text and image, software standards and methods, computer performance analysis, and assists in training internal staff. A bachelor's degree in computer science and at least eight years of work experience in the systems software field or equivalent is required. Detailed knowledge of MVS/XA or MVS/SP, JES3, ACF/VTAM, CICS/VS, IMS/VS-DB, DB/DC Data Dictionary, and SMP is highly desired.

## Data Base Administrator

Is responsible for establishing and enforcing data base standards and procedures for the corporation, logical and physical base design, software installation, system optimization, software and data security, and back-up of corporate data bases. A bachelor's degree in computer or information sciences with at least six years experience with CICS/VS, IMS/VS-DB, DB/DC Data Dictionary, and RACF is required. Applicants with experience with equivalent products in a large computing environment will be considered.

## Data Communications Specialist

Is responsible for software installation and maintenance, system optimization, data communications software, security, and back-up of software and data. Supports software for local and remote telecommunications networks at both corporate and distributed sites. A bachelor's degree in electrical engineering or computer science is highly desired, along with four to six years experience with IBM Systems software. Detailed knowledge of CICS/VS, IMS/VS-DB, ACF/VTAM, RACF, and related performance measurement and accounting software is desired.

## Manager of Data Center Operations

The Manager of Data Center Operations plans, organizes, and supervises data center tasks at the central computer site for the corporation. The manager is responsible for the delivery of services to all facilities including remote sites. The Manager works with Data Center Operations Managers at each healthcare facility to coordinate and ensure the quality of delivered services. A bachelor's degree or equivalent, and seven or more years operations supervisory experience in a large center with IBM 43XX or 30XX computers using MVS/XA or MVS/SP, JES3, CICS/VS, IMS/VS-DB, and related products desired.

## Information Center Manager

The Information Center Manager is responsible for providing office automation support, end user computing support, consulting, training to users in personal and departmental computing, product evaluations and recommendations. A bachelor's degree in computer or information science is required with a master's preferred. Detailed product knowledge of applications products typically found in an Information Center is necessary. Five or more years of computing experience in a college or university user services environment is highly desired.

We are offering an environment of professional growth and teamwork, highly competitive salaries, and an excellent fringe benefits package. Qualified candidates are encouraged to submit their resume and salary requirements to:

*Michael F. Charles*
*Director of Information Systems*
**Millard Fillmore Hospitals**
**3 Gates Circle**
**Buffalo, New York 14209**

An Equal Opportunity Employer

---

case

# * SENIOR PROGRAMMER/ ANALYST
# * PROGRAMMER/ ANALYST

Work and live on the lake in the heart of Southeastern Wisconsin vacationland.

Learn manufacturing systems, advanced systems and programming techniques on large scale IBM 3081/3084 computing environment. Minimum of 2 years experience with COBOL, MVS, TSO and SPF required. Some previous experience with IMS DB/DC desirable but not mandatory.

J I CASE offers excellent salaries and accelerated growth in career path. To find out more, call our HOTLINE COLLECT at (414) 636-7495. No agencies please.

If unable to call, please send resume including current salary to:

Employment Manager
**J I CASE COMPANY**
**A TENNECO COMPANY**
25th and Mead Streets, Racine, WI 53403
An Equal Opportunity Employer M/F/H/V

---

MINIMUM 1 YEAR CONSULTING ASSIGNMENTS THROUGHOUT THE U.S.A.

## SYSTEMS DESIGNERS

## SOFTWARE PROGRAMMERS

## PROGRAMMER ANALYSTS

- ● Programmer Analysts - IMS DB/DC PL/1 or COBOL
- ● Software Programmers - VAX VMS
- ● Scientific Programmers - VAX VMS FORTRAN
- ● Software Programmers - ACP/TPF
- ● Programmer Analysts - ACP/TPF
- ● Programmer Analysts - IBM Sys 38/36, RPG III
- ● Systems Programmer - VM/CMS & MVS
- ● UNIX/C Consultants all levels

# KNIGHT PROGRAMMING SUPPORT, LTD.

[illegible] Third Avenue, New York, N.Y. [illegible]
212-355-7760

---

**Programmer/Analyst**

needed for Airline Control Program (ACP) operating system and Passenger Airline Reservation System (PARS) in ticketing applications. Software and systems design, coding, maintenance, testing & modification using IBM computer equipment, Basic Assembler Language (BAL) and Step by Step, Airline and Trace test tools. Must have minimum two years ACP work job or four years ACP related job. Must know BAL, Step by Step, Airline and Trace, and IBM equipment. 40 hours/week 7:30 AM - 4 PM Monday - Friday. Salary $3,200/month. Send resume to Job Service Of Florida, Miami Downtown Civic Center, PO Box 48-1400, Miami, FL 33248-1400. Reference: Job Order # 4066161.

---

## ASSISTANT DIRECTOR OF ACADEMIC COMPUTING

Master's Degree in Computer Science preferred for full-time professional administrative position. Responsible for direction of programming staff and operations; participation in [illegible] planning. Present operation includes DEC and IBM cpu's. Strong experience in operating systems required (VAX/VMS, IBM VM/SP, and RSTS/E). Depending upon qualifications and interest, an appointment with academic rank for teaching one course may be available. Send applications by June 14, 1985, to Office of Academic Affairs, Academic Computing Search, Western Kentucky University, Bowling Green, KY 42101. An Affirmative Action, Equal Opportunity Employer.

---

## CONSULTANTS

NEW YORK, ATLANTA, DENVER, NEW JERSEY

## TOP RATE$

- ● UNIX "C"
- ● [illegible] COMMUNICATIONS
- ● X.25, SNA
- ● 3270, 3780 PROTOCOL TESTING

PRINCETON
INFORMATION LTD.
2 PENN PLAZA NY, NY 10001
212-[illegible]

---

## MIS DIRECTOR

Excellent opportunity with progressive organization. Will [illegible] in DEC 11/70 shop. [illegible] Salary $40K.

**ROBERT HALF**
of San Antonio, Inc.

[illegible] IH 10 West, Suite [illegible]
San Antonio, Texas 78[illegible]

1-800-[illegible]
In Texas dial (512) [illegible].

---

## COMPUTER SCIENCE

Position opening in mid-August 1985 in small Catholic College Seminary in east central Iowa. Responsible for teaching a variety of undergraduate courses to include Basic, Pascal [illegible], Fortran, Assembly Language, and Cobol. Qualifications: M.S. required. Salary and rank commensurate with qualifications and experience. Application deadline: June 15, 1985. Send current resume and three letters of recommendation to: Chair, Dept. of Science/Math, Divine Word College, Epworth, Iowa 52045. AA/EOE

---

# Programmer/Analyst
## VAX BASIC

**A newly created position...**
**you're in at the start of highly sophisticated systems development**

The Kendall Company, an $800+ million subsidiary of Colgate-Palmolive is a dynamic, growing manufacturer of consumer, industrial and healthcare products. We are expanding our technical computing systems area to develop networks and lay the groundwork for new CAD systems.

You'll make the most of what you know and learn a lot more about VAX system management working with top-notch talent on interesting and diverse projects. The work of this area supports Kendall's technical users at all corporate locations, requiring some travel, and most importantly, your ability to work well with people.

To qualify, you must have at least 5 years programming experience (the last 3 in BASIC on a VAX/VMS system) and preferably, a wide range of experience in interactive systems.

**Qualified candidates should send their resumes to George G. Sweeney, The Kendall Company, One Federal Street, Boston, MA 02101.**

KENDALL
a subsidiary of Colgate-Palmolive Company
An Equal Opportunity Employer M/F

---

# CLASSIFIED ADVERTISING ORDER FORM

Computerworld's Classifieds work.

**Issue Date:** Ad closing is every Friday, 10 days prior to issue date.

**Sections:** Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Real Estate, and others).

**Copy:** We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines. Any special artwork should be enclosed with your ad size. Logos must be submitted on white bond paper for best reproduction.

**Cost:** Our rates are $144.90 per column inch. (Each column is 1 13/16".) Minimum size is two column inches (1 13/16" wide by 2" deep) and costs $289.80 per insertion. Extra space is available in half-inch increments and costs $72.45. Box numbers are $15.00 extra per insertion.

**Billing:** If you're a first-time advertiser, (or if you have not established an account with us.) WE MUST HAVE YOUR PAYMENT IN ADVANCE, or a Purchase Order Number. Any extensions on this policy must be made through our Credit Department.

Ad size desired: ____________________

____________ columns wide by ________ inches deep.

Issue Date(s): ____________________

Section: ____________________

Name: ____________________

Company: ____________________

Title: ____________________

Address: ____________________

____________________

Telephone: ____________________

Send this form to:

**COMPUTERWORLD**
**CLASSIFIED ADVERTISING**
**375 Cochituate Road**
**Box 880**
**Framingham, MA 01701**

*Telecopier service is available.*
*Call: 800-343-6474 or 617-879-0700*
*extension 456 or 481*

# BUY - SELL - SWAP

## NEW IBM EQUIPMENT FOR LEASE.

3083 CX's
4381 All Models
4361 All Models
3380 AD4's and BD4's
3480 A22's and B22's
3880 Models 3, 21 and 23

Most equipment available in 30 days.
Short-term leases our specialty.

**CALL US WITH YOUR SPECIFIC NEEDS.**

Randolph can deliver the hardware when you need it…and ease the pressure on your DP budget with low lease rates. Call William Rooney, Vice President, 800-243-5307 (in CT 661-4200).

**Randolph**

Twentieth 1965 Randolph 1985 Anniversary

CDLA

Randolph Computer Corporation
Division of Bank of Boston • 537 Steamboat Road, Greenwich, CT 06830

**CMI** A LEADING SPECIALIST SERVING THE DATA PROCESSING & TELECOMMUNICATIONS INDUSTRY

Buy • Sell • Lease

Absecon, NJ [illegible]
Boston, MA (617) [illegible]
Chicago, IL [illegible]
Encino, CA [illegible]
Houston, TX (713) [illegible]
Irvine, CA (714) [illegible]
Irving, TX (214) [illegible]-3111
Lebanon, TN [illegible]
Miami, FL [illegible]
Monmouth Beach, NJ
(201) [illegible]
St. Louis, MO (314) [illegible]
Tampa, FL (813) 273-[illegible]
Westport, CT (203) 222-7413
Frankfurt, Germany Telex:
[illegible]
Montreal, Quebec (514) 871-1121
Nyon, Switzerland Telex:
27268 CMI CH
Paris, France Telex: 214898 CMI FR
Toronto, Ontario (416) [illegible]
(416) [illegible] (Headquarters)
Vancouver, B.C. (604) [illegible]

**CMI FINANCIAL SERVICES GROUP**
2600 Telegraph Rd., P.O. Box 2026
Bloomfield Hills, MI 48303-2026
(313) 456-0000

**CMI**

A Torchmark Company
2600 Telegraph Rd., P.O. Box 2026
Bloomfield Hills, MI 48303-2026
TELEX: [illegible] CMI BDHS

**(313) 456-0000**

Member ASCD

**3380**
**3880**

Six Month Rates at 80% of IBM MLC.

Longer Term Leases at Even Lower Rates.

Member CDLA

SYSTEMS

**4341 4331**
**38 36 34**
**SERIES 1**

BUY • SELL • LEASE

COMPUTER BROKERS, INC.
3078 SHELBY ST.
MEMPHIS, TENNESSEE

CB

Call
TOLL-FREE
800-238-[illegible]
901-272-3822

PERIPHERALS

**3203 3370**
**327X 3411**
**3350 3420**

ascd

**AMERICAN DEC***

**VAX 780's**

Ready to Cluster - Complete with RA81's with DEC Installation

**617-437-7600**

A AMERICAN
USED COMPUTER

**DEC**

**RENT • BUY • UPGRADE • SELL**

THE ALTERNATIVE SOURCE FOR ALL YOUR VAX & PDP-11 NEEDS

**SYSTEMS • ADD-ONS • TRADE-INS**

| | | |
|---|---|---|
| VAX 780 | [illegible] | [illegible] |
| VAX 730 | [illegible] | [illegible] |
| VAX 730 | [illegible] | [illegible] |
| VAX 730 | [illegible] | [illegible] |
| 11/70 | [illegible] | [illegible] |
| 11/44 | [illegible] | [illegible] |
| 11/23 PLUS | [illegible] | [illegible] |

Customized Configurations—Call Today With Your Request.

| In Stock | In Stock |
|---|---|
| 11/84-DC | LP11-SA |
| 11/34A-YE | LP11-WA |
| 11/44-DA | MS11-PB |
| 11/84-PA | RA60 |
| DH11-AA | RA80 |
| DMF32 | RL02-AK |
| DW750 | RM03-AA |
| DZ11 | RX02-BA |
| H9642 | TU58-AA |
| LA12 | VT100-AA |

**CALL NOW FOR YOUR FREE CATALOG.**

DEC is the registered trademark for Digital Equipment Corp.

BROOKVALE

[illegible]

# 1-800-IBM-USED

The only number you need to call for your IBM computer requirements.

[illegible]

ALL UPGRADES
[illegible]
DISK
3340 3370
3350 3375
3380
TERMINALS
3178 3180
3278 5251/91
3274 PC/XT
TAPE
3411
3420
PRINTERS
5224 3203
5225 4245
5256 3262
LEASING
SHORT OR LONG TERM
NEW OR USED
4300
3033 308X
New or Used
SYSTEM 38
New or Used
SERIES I
IBM & CDC CPU's ALL MODELS
DISK TAPE PRINTERS FEATURES New or Used
SYSTEM 34/36
BUY SELL LEASE
IBM Maintenance Guaranteed, Equipment Configured to Your Requirements.
IF IBM MAKES IT, WE CAN SAVE YOU MONEY — whether you buy, lease or rent from us. We also need to buy your owned or rented used equipment. Call us for a quote.

---

3375
A & B Models
Avail. [illegible]
Sale/Lease

4341's
4381's
Sale/Lease

Printers
3203 3211 1403
3262 4245 4248
[illegible] 3287
Immediate Delivery

[illegible]

[illegible]
Immediate Delivery

TAPE DRIVES
3420 3430
3410 [illegible]
Immediate Delivery

We Buy, Sell & Lease IBM Processors and Peripheral Equipment

**Computer Marketing Inc.**
P.O. BOX 8, MARGATE, NJ [illegible]
[illegible]
Contact/Bernie Gast

Established [illegible]

---

## FORSYTHE McARTHUR ASSOCIATES, INC.

## USED IBM 3380 AA4's, B04's

for sale or lease
with or without 3880's

available May 10

• Hdqtrs: Skokie, IL (312) 675-8000

Atlanta (404) 953-9457
Denver (303) 980-3407
Detroit (313) 362-1272
Milwaukee (414) 785-8544
Stamford, CT (203) 328-6649
St. Louis (314) 991-1716

---

## THE SOURCE FOR series/1

• BUY • SELL
• LEASE
NEW OR USED

[illegible]

---

NPA
[illegible] SYSTEMS INC.

SPECIALIZING IN:
PURCHASE
SALE, TRADE,
LEASE, RENT,
AND SERVICE OF
Data General
EQUIPMENT

[illegible]
[illegible] AVENUE HOLBROOK, N.Y. [illegible]
2002 FIFTH ST • BERKELEY, CA [illegible]

New York
516-467-[illegible]
California
415-849-[illegible]
Telex
510 222-[illegible]

---

## 3705

BUY • SELL • LEASE

---

# SERIES 1.

NEW, USED, FEATURES, & CDC PERIPHERALS.
HARD TO FIND NEW PRODUCTS IN STOCK.

## 34, 36, 38.

S/36's UNDER IBM LIST.
72 HOUR UPGRADES, S/36 FEATURES.

## 4331/4341.

TAPE, DISK, PRINTERS,
FLEXIBLE LEASE ALTERNATIVES.

## 5100, 5120, S/23.

DISPLAYWRITERS IN STOCK NOW.

## 800/328-3884

IN MINNESOTA, CALL 612/936-9280

*We do an exceptional job— our clients do repeat business.*

X-ceptional!

***XERXES COMPUTER SALES***
*10759 Bren Road East*
*Minnetonka, MN 55343*

---

## 4381-P2

AVAILABLE NOW

Short Term Lease

[illegible]

- ★ Test MVS XA
- ★ Position for [illegible] growth to 308X & 3090 CPU
- ★ Save [illegible]

[illegible]
(313) 774 7400

AEL

---

FOR SALE
Excellent Price
Bolt, Beraneck and Newman
C/70 Minicomputer

[illegible], (2) 160mb removable disk pack drive, microcassette tape drive for IPL, (8) RS-232C user ports, 19" rack mount with power distribution and cooling fans. 1600bpi, 125ips, 1/2" 9 track vacuum column MTU with 19" rack mount cabinet. Runs BB and N UNIX. [illegible] terminals available.

Contact:
Mike Powell
(813) 821-[illegible]

---

Find a computer
in
Cleveland,
or a disk drive in
Detroit.
Right here
in
Computerworld's
Classifieds.

COMPUTERWORLD

---

SALES LEASING

TexCom

S/36 S/38

SERIES/1

[illegible] AND [illegible] PERIPHERALS

---

## Inflation Fighters

**Quality & Savings**

Slightly used. Money Back Guarantee. Full Reels. All External Labels Removed. Guaranteed for use at 800 BPI through 6250 BPI.

| | | |
|---|---|---|
| 2400' | Reel | $4.95 ea. |
| 1200' | Reel | $4.25 ea. |
| 600' | Reel | $3.50 ea. |

*All Tapes with Hanging Seals*

We pay freight on orders over 300 tapes.
All orders shipped within 48 hours.
Call or Write

**Computer Tape Mart**
44A Seabro Avenue
N. Amityville, New York 11701
[516] 842-8512

---

Sell IBM
S/1 34
38 UPGRADES
Lowest Prices
36
Call Collect
404-[illegible]
DATAMARC
[illegible]
Suite [illegible]
Atlanta, GA [illegible]
We Pay Highest Prices For S/34's

LEASE • PURCHASE • SELL

## IBM SYSTEMS

- *Purchase-Lease Back*
- *Customized Leasing*
- *Upgrade Flexibility*
- *All models & peripherals*

CALL US TODAY

**612/936-0226**

**WINTHROP**
RESOURCES CORPORATION
Computer Sales and Leasing Division

5 OPUS CENTER • 9900 BREN ROAD EAST • MINNETONKA, MN 55343

---

## MARION

**BUY • SELL • MAINTAIN**

## IBM SYSTEM/34/36

DISPLAY STATIONS

- PROMPT DELIVERY
- ALL SYSTEMS 34 ARE FULLY RECONDITIONED
- ALL SYSTEMS 34/36 CONFIGURED TO YOUR NEEDS
- PERIPHERALS — NEW AND USED
- UPGRADES AND FEATURES DELIVERED AND INSTALLED
- LONG TERM LEASES AT COMPETITIVE PRICES
- SHORT TERM RENTALS
- TRADE-INS ACCEPTED
- GUARANTEED WMC or IBM MAINTENANCE

*A PHONE CALL CAN SOLVE ALL YOUR EQUIPMENT PROBLEMS*

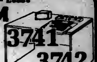
TALK TO US . . . **(201) 343-4554**

---

Buy - Sell - Lease

## IBM

**S/34**
**S/36**
**S/38**



UPGRADES

CPU's CRT's PRINTERS
ALL MODELS

PURCHASE/LEASEBACK
SHORT & LONG TERM LEASES

**Computer Marketing of America, Inc.**
P.O. Box 71
610 Bryan Street
Old Hickory, Tennessee 37138

**1-800-251-2670**
In Tennessee: 615-847-4031

---

**VAX**
11/730 11/750 11/780
SYSTEMS — MEMORY
OPTIONS — MODULES
NEW & USED

**DEC TERMINALS**
LA12AB LA12B
UNUSED
MAKE OFFER
MANY AVAILABLE

**FUJITSU**
ALL DRIVES AVAILABLE

**EMULEX**
CONTROLLERS
COMMUNICATIONS

**DEC**
OPTIONS — MODULES
MEMORY — SPARES

**IBM**
4978 MOD 1 5285-CO5
3742 3771 3774

NATIONAL
COMPUTER EXCHANGE
800 NORTH LUNAR AVENUE
BREA, CALIFORNIA 92621
714-990-8968

800-624-9299

---

IBM Displaywriters

---

## IBM SERIES/1

SAVE UP TO 80%
ALL MODELS & PERIPHERALS
NEW & USED
1, 2 & 3 YEAR RENTALS

## IBM System/38

ALL MODELS • FEATURES & UPGRADES
SPECIAL LEASE PROGRAMS

## IBM System/36

ALL MODELS • QUICK DELIVERY
SPECIAL Option+Plus+Lease™ PLAN

## IBM System/34

TOP SAVINGS • QUICK DELIVERY
SHORT & LONG TERM LEASES
MEMORY • FEATURES • UPGRADES

## 4331 • 4341

FEATURES • MEMORY • UPGRADES
SAVE 40% to 75%
NEW OR USED • QUICK DELIVERY

## 4361 • 4381
## 308X • 3090

LOW LEASE RATES
FLEXIBLE LEASE OPTIONS

**TERMINALS/COMMUNICATIONS**
**DISK • PRINTERS • TAPE**

3178 • 3179 • 3278
3274 • 3276
3370 • 3375 • 3380
3480 • 3705 • 3725
3800 • 3830 • 3880
3262 • 3800 • 4245

## LEASING?

Call Computer Options
for YOUR BEST RATES
& LEASE OPTIONS

CALL TOLL FREE

**800/328-5718**
(In Minnesota — 612/544-8080)

**COMPUTER OPTIONS, INC.**
1660 SOUTH HWY 100 • MINNEAPOLIS, MN 55416

COI *"Your best option"*

CLIP AND MAIL

SERIES/1 AND SPECIAL PRODUCTS

BUY • SELL • LEASE

- ALL PERIPHERALS
- [illegible]
- [illegible]
- [illegible]

SERIES/1 FEATURES AVAILABLE SEPARATELY

- [illegible]

- 3380-A[illegible]
- 3380-[illegible]
- 3380-C[illegible]

LOWEST PRICES EVER! AVAILABLE NOW!

PROCESSORS

- [illegible]

SPECIAL: AVAILABLE [illegible]

SELL OR LEASE

INVENTORY SALE

- [illegible]

SYSTEM/36

CALL FOR PROMPT QUOTE!

WANT TO BUY

- 3705
- 3274's
- [illegible]

ECONOCOM IN MANY INSTANCES RIGHT IN YOUR OWN BACKYARD

CLIP AND MAIL

FORSYTHE McARTHUR ASSOCIATES, INC.

USED IBM 4381-2 Processor.

for sale or lease available June 10

Hdqtrs: Skokie, IL (312) 675-8000

Atlanta (404) 953-8457 Milwaukee (414) 785-9544
Denver (303) 980-3407 Stamford, CT (203) 359-5649
Detroit (313) 332-1272 St. Louis (314) 991-1716

When you need additional DEC* computer hardware, check the inventory of over 40,000 CPU's, peripherals and options at

Midwest Systems

☐ VAX*
☐ PDP*-11
☐ LSI-11*
☐ OPTIONS/PERIPHERALS
☐ CUSTOM CONFIGURATIONS

Midwest Systems, Inc. provides DEC* computer hardware, from add-on components and peripherals to custom configured systems. Your hardware arrives fully refurbished and eligible for DEC* Maintenance—ready to start life anew.

(800) 328-7000

Or in Minnesota, (612) 894-4020. Call your Account Representative to receive our current promotional catalog.

MIDWEST SYSTEMS, INC.
12117 Riverwood Drive, Burnsville, Minnesota 55337

*A trademark of Digital Equipment Corporation

Check us out for DEC

and/or DEC serviced compatibles

VAX 780, 750
11/73, 70, 44, 34, 23
All immediate & guaranteed
Everything from 11/23 to VAX

DATAWARE SYSTEMS LEASE
800-221-6318
30 Bay St. S.I., N.Y. 10301
(718) 447-4911 TELEX 428384
TWX 710588-6738

DEC is a registered trademark of Digital Corporation

DATA GENERAL

Hanson Data Systems

UNIT RECORD EQUIPMENT

SALE OR LEASE

IBM UNIT RECORD MACHINES
026—029—082—083—084
085—087—088—129—514
519—548—557

NEW & USED
DISK PACKS—DATA MODULES
2316—3336(1)—3336(11)—3348(70)
MAG. TAPE-DISKETTES
*Every Item Guaranteed*

*Highest Prices Paid for Used Packs & Modules*

## There's No Time For DOWNTIME!

### And that goes for your business as well as your computer system!

So, while the industry works on your system's problems, let us work on your business problems. Advertise in—

### COMPUTERWORLD CLASSIFIEDS!

One insertion will let a potential audience of over a half a million readers know what you are looking for or have to offer. Whether you are looking to recruit computer professionals, want to buy, sell or lease equipment, have computer time or services to offer, or software packages to sell, and more, Computerworld Classifieds will help you get a lot of exposure and get things done faster.

The open line rate is $10.35 per line and there is a minimum size of 1 column by 2" at a cost of $289.80. We can accomodate up to 5 columns and depth measurement increases by half inch increments.

Ads may be mailed in, cleanly typewritten, with a letter stating the size desired and the issue in which it is to be run. Our adtakers will take ads that require no extensive artwork or borders over the phone. We also provide telecopier service.

Any borders, logos, or artwork should be sent in with your ad and must be dark and clear enough to be reproduced.

Computerworld comes out every Monday and our deadline for receiving ads is 10 days (or six working days) prior to the issue date desired.

**First time advertisers must send either payment or a purchase order along with their first ad.**

Our mailing address is:

**Computerworld Classified Advertising,**

Box 880, 375 Cochituate Road,
Framingham, Mass. 01701
800 343-6474; (617) 879-0700

MISSISSIPPI CENTRAL DATA PROCESSING AUTHORITY

Sealed proposals will be received by the CDPA, 508 Robert E. Lee Building, Jackson, MS 39201 for the following data processing equipment and services:

Request for Proposal No. 1016, due 3:30 p.m., Monday, May 27, 1985, for the acquisition, of the version XA upgrade to IBM's MVS/SP operating system for the STATE COMPUTER CENTER.

Detailed specifications may be obtained from the CDPA office. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

Lisa Winstead or Elaine Krause,
State Central Data Processing Authority
601/359-1395

FOR SALE
HONEYWELL DPS8-44D
"SUPER OFFER"

- CPU8128 512K Words
- CPS8128 Dual CPU
- IOU800B
- DCU8661
- DCM8605
- CCU0401
- MSP0612
- MSU0500 @ 2
- MSU0451 @ 2
- MTP0611
- MTU0610 @ 6 (6250BPI)
- PRU1201 @ 2

*System is 2 years old.*

Contact Everett Mitchell
General Electric Co.
(215) 251-7078

**IBM**

34 • 36 • 38 • 43XX

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

• Printers • Disk Drive •
• CRT's • Modems •
• Tape Drive • Controllers •

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

UPGRADES
• 34 • 36 • 38 •

IBM PC XT AT
Printers / Monitors / Modems

System 38 Mod 5
4—MEG 3470's U-34's
Available Now!
1100/70 Available in
late Spring.
Loaded with peripherals!
UTS Terminals
20's • 2000's • 200's • UTS 400

**Pearl Computer Division**
A Division of Pearl Equipment Co. Inc.
• WE ARE A FULL LINE DEALER •
• Buy • Sell • Lease • Consultation •
P.O. Box 24[illegible] • 4717 Centennial Blvd.
• Nashville, Tennessee 37209 •
• Telex: [illegible] • (615) 385-1700 •
[illegible]

---

# datacomp

## System/38

- Models 5,6,7,8
- All Upgrades
- National References

Series 1

Displaywriters

3 Regional Warehouses
To Better Serve You

| Displays | | I/O | Printers | |
|---|---|---|---|---|
| 3180 | 5291-1 & 2 | 3411 | 5262 | 5225 |
| 5251-11 | 5294 | 3370 A & B | 5219 | 5256 |
| 5251-12 | | | 5224 | 5262 |

System 34

Leasing Program
"Setting a New Standard"
"Low Cost – Simple – Great Flexibility"

Excellence is Our Standard

Chicago, IL 312/325-1200
Atlanta, GA 404/991-2881
Dallas, TX 214/991-2515
Houston, TX 713/973-6295
Springfield, NJ 201/467-8886
Philadelphia, PA 215/667-4000
Los Angeles, CA 714/671-3011

CDLA Member Computer Dealers & Lessors Association

## System/36

- All Models
- Fast Delivery

Want to Buy

Call Toll Free
800/323-3280
Ask for our Catalogue

---

When You Think Of Leasing
Anything
Think Of Comdisco

COMDISCO

---

HP

TELEX 786827

**encore**

(213) 462-8117

---

# BUSINESS OPPORTUNITY

Foreign company with manufacturing capabilities and a strong marketing position in the computer field is seeking American company interested in negotiations for the following products:

- [illegible]
- [illegible]

The above products to be negotiated in the following options:

- Purchase of used or finished products
- Purchase of technologies
- Joint venture

For further details, please contact:

Mr. A. [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
Telex [illegible]

---

# BIDS & PROPOSALS

### THE COMMONWEALTH OF MASSACHUSETTS
### DEPARTMENT OF PUBLIC WELFARE
### REQUEST FOR INFORMATION

The Commonwealth of Massachusetts, Department of Public Welfare is interested in obtaining information from interested parties to assist in the preparation of a Request For Proposals (RFP) to procure the services of a qualified data processing service bureau organization to operate and maintain the Massachusetts Public Assistance Control System (MPACS).

MPACS is a large, on-line data base system that will be used by the Department:

- To automatically make determinations of eligibility for Department administered programs including:
  - Aid to Families with Dependent Children (AFDC)
  - Food Stamps
  - Medical Assistance
  - Refugee Resettlement Program (RRP)
  - General Relief
  - Emergency Assistance
  - Employment and Training
- To automatically generate the appropriate documents, checks and other materials relevant to each applicant.
- To maintain historic, financial and other records and controls.

MPACS is being developed under a contract with [illegible], Inc. A pilot office is scheduled for operation beginning March 1, 198[illegible]. That pilot office operation and the operation of the system as it is expanded throughout the state will be the responsibility of the contractor selected as a result of this procurement.

The Department believes that potential bidders can provide suggestions and recommendations on the technical and business requirements and the contractual provisions that will assist the Department in the preparation of the Request For Proposals (RFP). The Department, therefore, requests interested and qualified organizations to participate in reviewing and making suggestions and recommendations by way of this RFI (Request For Information) process. The Department plans to conduct the following process for all who elect to participate:

1. Release RFI
2. Hold a conference for all interested participants to review the process, on May 21, 1985 at One Ashburton Place, 21st floor Conference Room 1, between 9 A.M. and 12 noon.
3. Compile all written suggestions and recommendations submitted by participants.
4. Schedule individual meetings with participants, selected at the Department's discretion, to discuss suggestions and recommendations.
5. Notify all participants of decisions made by the Department (the source of any suggestions and recommendations will not be made known to other participants).
6. Prepare and release final Request For Proposals (RFP).

Any qualified organization that wishes to be a participant in this process must write to:

Richard R. Smith, Room 7[illegible], Department of Public Welfare
600 Washington Street, Boston, MA 02111

and include a statement setting forth the following:

1. Name, address and phone number of its representative;
2. The understanding that this is an informal request and anything contained in the RFI is not binding on the Commonwealth;
3. Whether a representative will attend the Conference (No one will be allowed to attend the Conference unless they have so indicated).

All participants will receive an RFI (including voluminous attachments).

Any organization, whether or not it participated in the process, may receive the final RFP when available.

It is anticipated that the final RFP will be released in late July, 1985. Questions regarding this notice may be addressed to Richard R. Smith, (see above) or by telephone (617) 727-[illegible].

---

Make your call
for
BIDS & PROPOSALS
here in
COMPUTERWORLD.

Call
1-800-343-6474
or, in Mass.,
(617) 879-0700

---

### REQUEST FOR PROPOSALS FOR PROFESSIONAL CONSULTING SERVICES FOR THE FLORIDA LEGISLATURE

The Joint Legislative Management Committee of the Florida Legislature requests proposals from professional consultants for review, evaluation, planning, and advisory services relating to data processing and information systems.

Detailed information on the conditions and required contents of proposals may be obtained by writing to the following address:

Joint Legislative Management Committee
Systems and Data Processing Division
[illegible]
117 Holland Building
Tallahassee, Florida [illegible]

Proposals must be received by 5:00 p.m. June 10, 1985

---

**FORSYTHE McARTHUR ASSOCIATES, INC.**

NEED TO BUY
4341-2's And 12's

Hdqtrs: Skokie, IL (312) 675-8000
Atlanta (404) 953-0457
Denver (303) 980-3407
Detroit (313) 332-1272
Milwaukee (414) 785-8544
Stamford, CT (203) 359-5646
St. Louis 314-991-1716

# The Bulletin Board

## PRIME

LARGE SELECTION OF USED
PRIME COMPUTER SYSTEMS
[illegible] TO SELL
[illegible]
1st SOLUTIONS, INC.
3801 EAST CAMPBELL Ave.
PHOENIX, ARIZONA 85018
(602) [illegible]
ASK FOR DON OR MATT

## SPERRY UNIVAC

**FOR SALE**
SPERRY [illegible] Model
128 KB, 20 MB Disk Dr., 2 CRT'S
300 LPM Printer, [illegible]
SPERRY Main. Thru 4/85
CONTACT: S. E. CHANDLER
PHONE: (614) 844-[illegible]

## DEC

**DEC NEW & USED**
**BUY - SELL - EXCHANGE**
VAX 780, [illegible], RL02,
[illegible], LA120, VMS

BA11-[illegible]
BA11-[illegible]
DD11-DK
DMR11-AC
DMV11-AA
DRV11-W
DRV11
DZ11-A
DZ11-E
DZ11-DP
[illegible]
[illegible]

[illegible]
KW11-[illegible]
LP11-[illegible]
MS11-PB
MSV11-PL
RK11
RX211
RX02-BA
RL11
RM80-AA
TS11-CA
VT102

[illegible] COMPUTER CORP.
P.O. Box [illegible]
San Jose, CA [illegible]
(408) [illegible]

**SPRING SPECIALS**

| | |
|---|---|
| MS210 | $ 195 |
| LA120-BA, New | 1,895 |
| LP11-CA, New | 6,400 |
| RM05-AC, Unused | 6,800 |
| MS780-E, Unused | 15,500 |
| VAX 780 CPU 4MB, Used/Refurb | $94,500 |
| MS780-CC | $2,095 |
| TS11-CA, Unused | $8,000 |
| H7100-A | 3400 |
| TU77 Master | $10,500 |

DEC cables and options available
SEVCO INC.
(617) 486-[illegible]
(617) 486-[illegible]

Making Buy, Sell or
Lease Decisions?...
**DEC-VAX**
PDP-11
SYSTEMS
FEATURES - COMPONENTS
(313) 254-2850
**VARGO**
Co. Inc.
40945 Van Dyke Ave.
Utica, MI 48087

**DEC BARGAINS**

| | |
|---|---|
| 11/34A CPU Set | [illegible] |
| 11/44 [illegible] | $2,775 |
| 11/44 CPU Set [illegible] | $4,[illegible] |
| DMF11-AA | [illegible] |
| [illegible] | [illegible] |
| [illegible] | [illegible] |
| FPF11 | $1,[illegible] |
| FP11A | [illegible] |
| KK11-A | $1,175 |
| MS11-LP | [illegible] |
| MS11-MB | [illegible] |
| [illegible] | [illegible] |
| [illegible] | [illegible] |
| [illegible] | [illegible] |
| MSV11-LP | [illegible] |
| MSV11-PL | [illegible] |
| VAX [illegible] | $1,[illegible] |

Call Ray at [illegible], Inc. (617) [illegible]

## DEC

**VAX**
SYSTEMS & OPTIONS
SPECIALIST
C.D. SMITH & ASSOC. INC.
(713) 481-3112
ASK FOR C.D.

**D.E.C. SPECIALS**
VAX 11/780 8 MB $[illegible]
11/70 Core 1/2 MB $[illegible]
RP06 Spare Parts [illegible]
[illegible] Consulting Services Inc.
P.O. Box [illegible]
[illegible], CT [illegible]
[illegible]

**VAX SYSTEMS**
CUSTOM CONFIGURED
TO MEET YOUR NEEDS
SELL-LEASE-RENT
BROOKVALE ASSOCIATES
800-645-1167 (516) 273-7777

**ATTN VAX USERS**
Discounted...
RUA81-CA VT 240
VT 241 Floating Points
Upgrade Kits Memory
Digital Computer Consulting
(617) 587-2900

**11/780-4MB**
with TU77
Available Immediately
$89,000
DEC Maintenance & Refurbished
Associates of Maine
(207) [illegible]

**VT 220s**
Only $875 ea.
Call Digital Computer
Consulting
(617) 587-2900

**DEC PDP 11/70**
Two Years Old
Best Offer
Contact Steve Brinkman
800-538-1984
Or In CA (714) 641-1984

System Integrator immediately wants used or surplus Fujitsu Eagles.

Alphatronix, Inc.
550 S. State College Blvd.
Fullerton, CA 92631
(714) 680-6511

**NEW VAX'S**
11/750 DMF32-LP
XA-AE LA100-BA
TU80 CD861-HM
RUA81-AA CD861-DZ
Priced To Sell. Ready To Ship.
Clinton Digital, Inc.
(617) 877-[illegible]

| | |
|---|---|
| DECMATE I | $1[illegible] |
| DECMATE II | [illegible] |
| LQP02 | [illegible] |
| Sheet Feed | [illegible] |
| Rainbow 100 | [illegible] |
| LA50 | 495 |
| LA100PC | [illegible] |

Digital Computer Resale
(713) 445-6862

**BUY • SELL • TRADE**
11/60-SE DRV11-J MS780-DC
11/725 DZ11-DP MS780-EC
BA11-KU KDF11-BE RA60-CA
DD11-DK LA120-DA RA81-F
DMF32-LP LA100-BA RL02-DC
DMR11-AC MS11-PB RLV12
NEW YORK COMPUTER EXCHANGE
(914)735-[illegible] (800)645-6100

In Stock
**2020 (Unused)**
**$15,995.**
Digital Computer Resale
(713) 445-6862

## NCR

[illegible] 200MB DISKS
FOR SALE
NCR 658 200MB Disk Drives
[illegible]
In quantity, in Texas.
Call Jody Ripper
(214) [illegible]-6877

## BURROUGHS

BUY SELL LEASE
**BURROUGHS**
B-20 to B-7900
SPECIAL 207 DISK
(10 Units)
B900 DISK PACK (206 Style)
Subsystem
**DEPOT**
**MAINTENANCE**
Computer Provisions
(216) 248-7878

[illegible] FOR SALE
Available July 1st
[illegible] Memory
Disk [illegible]
Line Adapters [illegible]
Printer [illegible]
Tape Drive [illegible]
Under Burroughs Maintenance
Contact [illegible]
[illegible]

## HONEYWELL

LEVEL 6 & DPS 6 EQUIPMENT
NEW & REFURBISHED
Systems • Peripherals • Memory
CRTs • Applications Software
***SPECIAL***
MLC 9101/9601
MLCP w/(8) RS232 Asynch. Lines $3,875
PRU 9103/9603
300 LPM Drum Printer w/VFU $16,800
In Stock - Immediate Delivery
[illegible] Computer
Services Ltd.
160 Bearfoot Rd.
Northboro, MA 01532
(617) 393-[illegible]
TWX 710-347-7574

FOR SALE By User
HONEYWELL
SYSTEM
Level 6 Model 43 with
2 Disks, 1 Tape, 1 Printer, 8 CRTs
Maintained exclusively by Honeywell
Immediate Delivery
Call Jeff Stiles at (213) [illegible]

## WANG

BUY - SELL
MVP,LVP • OIS • VS • PC
SYSTEMS IN INVENTORY
OIS-50 • 2200-4
[illegible]
EQUIPMENT MARKETING
[illegible]
(602) 277-8236

Buy • Sell
Used
Wang Equipment
Guaranteed For Wang Maintenance
[illegible] Associates Inc.
2470 Windy Hill Road, Suite [illegible]
Marietta, GA 30067
[illegible]
[illegible]
(404) [illegible]

## WANG

Remanufactured
Wang equipment
Buy • Sell
[illegible]
[illegible]
[illegible]
[illegible]
174 [illegible], Hackensack, NJ 07601

Authorized Wang
Used Equipment Dealer
Selling and Leasing Coast to Coast
OIS • VS • WPS
• Systems • Peripherals
• Wang Maintenance
[illegible]
[illegible] Return Privilege
Call Electronic Office Exchange
[illegible]

ERST Is The Leading Dealer
In WANG Equipment:
2200 • VS • WP • PC
Rentals & Leasing On Request
Toll Free: 1-800-FOR ERST
In New York: (212) 481-1100
ERST
[illegible] Lafayette, NYC 10012

BUY • SELL • LEASE
All models of Wang equipment
and plug compatibles
SPECIAL OF THE WEEK:
128K MVP CPUs $3,500 ea.
I C A
Founded 1981 by Wang ex-employees
(404) 977-[illegible] or (800) 241-[illegible]

## DATA GENERAL

**CRT's**

| | |
|---|---|
| D-211 | $[illegible] |
| D-460 | $1,2[illegible] |
| D-100 | $400. |
| D-200 | $[illegible] |

[illegible] Sciences, Inc.
(301) 328-[illegible]

[illegible] Data Ltd.
New and Used
DG equipment in stock.

| | |
|---|---|
| C/350 | $5,000 |
| S/140 w/512 kb | $8,000 |

Call for unlisted equipment
(516) 481-1160

**NEW D.G. C.R.T.'s**
6011 $[illegible]
All other C.R.T.'s comparably priced. Lowest prices on all Disk, Tape, Controller, Memory boards and Multiplexors
[illegible] Data Systems
1-800-[illegible]
New York State 212-[illegible]

## IBM

Buy ...... Sell ...... Lease
**IBM MICR**
3890 - 1419
1255 - 3694
(313) 726-4[illegible]
COMPUWARE

BUY-SELL-LEASE
**34-36-38**
Guaranteed Quality Service
Special Reduced Prices
New and Used Equipment
[illegible] Computer Systems, Inc.
800-[illegible]
In VA (703) 642-1030

Want To Buy
**System 38s**
Call Bob Or Joe
800-433-4148
(213) 212-3111

## IBM

[illegible] Exchange, Inc.
Buy-Sell-Trade
IBM PC IBM XT
IBM AT IBM Compatibles
New and used equipment
In stock for immediate delivery.
Call (516) 481-1165

Wanted Slightly Used
IBM For Small Company
K-80-CPU 128K-1 Line Comm
3 PC Screen 5251-2
1 PC Printer 5224-240 LPM
1 PC Software SSP
Call (800) [illegible]

**5225 Model 4**
Available 5/24
Call Clark
800-423-3662
(818) 994-8400

Fox Computer Sales
Buy • Sell • Rent • Lease
DATAPOINT
W.T.B.: Used Equipment
(216) 449-6866

**SELL OR LEASE**
(2) IBM 3880-3
[illegible] purchase
$7,500/24 mos; $[illegible] mos
Available June 1st
[illegible] Financial, Inc.
(813) 844-[illegible]

**WANTED**
IBM 2848 Model 3
IBM 2260 Model I
B.C. Hydro
Contact: Heinz Dobbeck
(604) 668-6846

**IBM PERIPHERALS**
1419-[illegible] 3340's
3271-02 3411-3
3286-3 3420-5's
3420-31 3340-01
3880-1 3790-1
Call (314) 389-0651
Computer Merchants Inc.

**SYSTEM/36**
**SYSTEM/36**
Systems & Upgrades
Memory, Communications,
Disk & Tape Drives
(713) 667-7117 (213) 378-4457

SALE/LEASE
**4331-L2**
8 Comm. Lines
3278/3279 Adapters
Full Features
Call Bill Hagan (314) 389-0651
Computer Merchants Inc.

FOR IMMEDIATE LEASE
**4341-M12**
Call Pete Black
(313) 254-2850
VARGO Company, Inc.

Lock in MORE:
special sale or lease:
**3278-2**
DISPLAY STATION
VARGO Company, Inc.
(313) 254-2850
CDLA - DDA

WANT TO BUY
TOP DOLLAR PAID
3083 4361 4341
3380 3375 3203-5
Corporate Leasing Ltd.
Randy [illegible] or Terry [illegible]
(312) [illegible]

## IBM

**S/34 HOLDOUTS**
Closeout Prices
• Disk - Memory
• Communication
• Workstation/Printers
512-[illegible]

## HEWLETT PACKARD

**HP3000**
SERIES 64 & 68
WANTED
CALL IMMEDIATELY
Referral Fees Available
213/458-2843
800/843-4864

**HEWLETT PACKARD**
**1000 • 2000 • 3000**
SYSTEMS & PERIPHERALS
BUY & SELL WORLDWIDE
EURODATA, INC.
(613)/[illegible]
Tx: [illegible]

**HP 3000**
BUY • SELL • RENT • LEASE
Complete Systems
Processors • Peripherals • Parts
[illegible] Corporation
Santa Monica, California
(213) 450-[illegible] (800) 845-4664
Telex: 215 [illegible] FCS UR

Your Ad
Could Be Here
For
$140.00

## MISC.

**FOR SALE**
By User
**S T C**
(1) 3800 Tape Controller
(8) 3670 Tape Drives
*ONLY 36 MONTHS OLD*
*FULLY MAINTAINED*
*BY STC*
*Delivery at end of May 1985*
*Immediate Delivery*
Call Jeff Stiles
at (213) [illegible]

**PRINTERS**
Printronix P300 [illegible]
Complete $[illegible]
Data Products [illegible] New $[illegible]
Data Products [illegible] New $[illegible]
[illegible] Inc.
(918) 762-[illegible]

**SALE/LEASE**
NAS [illegible]
12MB PROCESSOR
7 CHANNELS
AVAILABLE IMMEDIATELY
CALL: JERRY [illegible]
DIGITAL SWITCH CORP.
(214) 238-[illegible]

Buy • Sell • Lease •
Short Term Rentals •
IBM
AVAIL. IMMEDIATELY
Cougar Computer Corp.
(213) 391-[illegible]
Member CDLA

# SOFTWARE FOR SALE

## HONEYWELL DPS-6 SOFTWARE

Danish software-house seeks contact with US companies interested in marketing of highly successful software package for DMIV-TP on-line development environment. If you think TPPO, TPPF, TSM etc. lack the edge, please call or write for more information on our product - Display Management System (DMS).

SOFCON LTD.
Vassingerødvej 28
DK-3540 Lynge, DENMARK
Phone +45 2 188878
Telex 18009
att. sofcon, Lynge

---

## SELLING SOFTWARE?

Sell
It
Here.

Place your ad in the SOFTWARE pages of COMPUTERWORLD.

Call:
1-800-343-6474
or (in Mass.)
(617) 879-0700

---

*Award-Winning*

*Featuring:*

- *Unsurpassed Documentation*
- *Large Scale Integration*
- *User-Defined Vocabulary*
- *Paperless Processing*

| | |
|---|---|
| *General Accounting* | *Payroll/Personnel* |
| *Accounts Payable* | *Book to Tax Accounting* |
| *Accounts Receivable* | *Order Processing* |
| *Equipment & Fixed Assets* | *Inventory Management* |
| *Financial Reporting* | *Sales Analysis* |
| *Planning & Budgeting* | *Oil & Gas* |
| *Job Cost Accounting* | *Spread Sheet Processor* |

**J.D. Edwards & Company**

*4949 S. Syracuse / Suite 3300*
*Denver, CO 80237*
*303/ 773 3732*

*Dallas — 214/ 458 0636*
*Houston — 713/ 850 8276*
*San Francisco — 415/ 571 5755*
*Newport Beach — 714/ 955 0110*
*Bakersfield, CA — 805/ 327 1911*
*Tulsa — 918/ 488 1477*

IBM

---

## MEDICAL BILLING SYSTEM SOFTWARE

An excellent opportunity to receive a complete Medical Billing Package. The system has been in use over 3 years and provides for every aspect of Medical Billing.

Programmed in COBOL, it is easily installed and easy to operate. Source code is available. User references can be provided.

For further details, call or write: David A. Corbin at Professional Billing Association, 71-B Allen Street, Springfield, Massachusetts, 01108, telephone number 413-734-4917.

---

## AD SPACE For Sale

Call 1-800-343-6474
(in Mass.) (617) 879-0700

or send materials to:

COMPUTERWORLD Classifieds
Box 880
375 Cochituate Road
Framingham, MA 01701

---

## SYSTEM/38 AND IIFA HANDLE HIGH VOLUMES.

IIFA is a fully integrated, native 38 system that handles high volume processing requirements. The software package includes:

- Accounts Receivable & Credit
- Accounts Payable
- General Ledger
- Customer Order Entry
- Inventory Management
- Engineering Records
- Purchasing & Receiving
- MRP & CRP
- Manufacturing Control
- Payroll

Call or write today for more information on how IIFA can help you.

FREEMAN AND ASSOCIATES
165 Wilmot Road • Deerfield, IL 60015
312/945-7100

---

# SOFTWARE WANTED

3375
A & B Models
Avail. 8/85
Sale/Lease

4341's
4381's
Sale/Lease

Printers
[illegible]
Immediate Delivery

[illegible]
Immediate Delivery

TAPE DRIVES
3420 3430
3410 [illegible]
Immediate Delivery

We Buy, Sell & Lease IBM Processors and Peripheral Equipment

Established 1969

**Computer Marketing Inc.**
P.O. BOX 8, MARGATE, NJ 08402-0[illegible]
609/823-8000
Contact/Bernie Gast

CDLA

---

# TIME & SERVICES

Use the classified pages of **COMPUTERWORLD** to tell everybody about the

**TIME & SERVICES**

you have to offer

To place your ad, call us at 1-800-343-6474 (in Mass., call 617-879-0700) or send all materials to:

**COMPUTERWORLD**

**Classifieds,**
**Box 880,**
**375 Cochituate Rd.,**
**Framingham,**
**MA 01701.**

---

## LOOKING FOR A QUALITY SERVICE ORGANIZATION IN SOUTH AFRICA?

The Field Engineering Division of NCR Corporation South Africa has comprehensive service coverage within South Africa and neighbouring States. On a selective basis we will service and maintain NON NCR PRODUCTS.

NCR's service offering includes a fully equipped Repair facility for all electronic equipment, P.C. Boards, Power Supplies, On Site or Depot Service, Remote Diagnostics, an expensive spare parts inventory and a complete Management Control System.

We invite enquiries from all interested parties. Our representative from South Africa will be in Dayton, Ohio from 3rd - 7th June 1985. Please contact Mr. V.A. Hands Tel (513) 445-[illegible] for further details or to arrange interview.

NCR CORPORATION (SA) (PTY) LTD
JOHANNESBURG, SOUTH AFRICA
TELEX 43-0178 TEL: 27-11-[illegible]-7000
CONTACT: GEORGE ISAACSON

---

## NOMAD™2

REMOTE COMPUTING SERVICES

BOEING COMPUTER SERVICES, INC.

CALL (312) 981-5260

10 GOULD CENTER
ROLLING MEADOWS, IL 60008

NOMAD2 is a trademark of D&B COMPUTING SERVICES, INC.

---

## THE SOURCE FOR REMOTE PROCESSING

- On-line/Batch processing
- MVS, VM, DOS environments
- Block time available
- Nationwide access via Tymnet
- Xerox 9700 Laser Printer
- Disaster recovery services
- Decision support software including SAS and IFPS
- Bank processing services

Call (919)469-3325 for more information or write to CompuSource c/o Marketing Division 1155 Kildaire Farm Road, Cary, NC 27511.

**COMPUSOURCE**

---

## COMPUTER TIME & TIMESHARING

- We broker computer time.
- All mainframes.
- Nationwide Service.
- NEVER a charge to the Buyer.
- Our fees paid by the Seller.

*Call Don Golden at*

Computer Reserves, Inc.
(201) 666-6166

---

## COMPUTER TIME RENTAL AT DOWNTOWN NYC

**MVS/TSO**

Low flat rate available.
Call SIL, Inc.
(212) 747-9066

---

## VAX AND PDP-11 DEVELOPMENT TIME

NO MILEAGE TOLL CHARGES / NO CPU CHARGES

Omnicomputer

$7/$14

RSTS/E VMS

PER HOUR CONNECT TIME

BUDGET BYTES™
212-944-6236

Omnicomputer, Inc.
1460 Broadway, New York, N.Y. 10036

---

## ICOTECH

Innovative Computer Techniques

COMPUTER SERVICES
IBM 3081 DEC-10

- Remote Job Entry
- Batch Processing
- Optical Mark Reading
- Online Programming
- Timesharing
- Laser Printing

COMPUTER OUTPUT MICROFILM

- [illegible]
- [illegible]
- [illegible]
- [illegible]

Route 202
Raritan, NJ 08869
201-[illegible]
Contact: Joyce [illegible]

## CLASSIFIED ADVERTISING ORDER FORM

### Computerworld's Classifieds work.

**Issue Date:** Ad closing is every Friday, 10 days prior to issue date.

**Sections:** Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Real Estate, and others).

**Copy:** We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines. Any special artwork should be enclosed with your ad also. Logos must be submitted on white bond paper for best reproduction.

**Cost:** Our rates are $144.90 per column inch. (Each column is 1 13/16") Minimum size is two column inches (1 13/16" wide by 2" deep) and costs $289.80 per insertion. Extra space is available in half-inch increments and costs $72.45. Box numbers are $15.00 extra per insertion.

**Billing:** If you're a first-time advertiser, (or if you have not established an account with us.) WE MUST HAVE YOUR PAYMENT IN ADVANCE, or a Purchase Order Number. Any extensions on this policy must be made through our Credit Department.

Issue Date(s):____________________

Section:____________________

Signature:____________________

Name:____________________

Company:____________________

Title:____________________

Address:____________________

Telephone:____________________

Send this form to:

**COMPUTERWORLD**
**CLASSIFIED ADVERTISING,**
375 Cochituate Road, Box 880,
Framingham, MA 01701

---

# Foreign Editorial/ Sales Offices

**Argentina:** Ruben Argento, Gen. Mgr., Computerworld Argentina, Av. Belgrano 406-Piso 9, CP 1092 Buenos Aires. Phone: 34-5883/5584, Telex: 22644.

**Australia:** Alan Power, Computerworld Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 4395133, Telex: AA74752 COMWOR.

**Brazil:** Eric Hippeau, Data News, Computerworld do Brasil, Servicos e Publicacoes Ltda., Rua Alcindo Guanabara, 25/10th Floor 20031 Rio de Janeiro, RJ Brasil. Phone: (021) 240-8225. Telex: 2130838(WORD BR).

**Denmark:** Preben Engell, Computerworld/Denmark, Torvegade 52, 1400 Copenhagen K. Phone: 01-955695. Telex: 27566 cwdan.

**England:** Martin Durham, CW Communications Ltd., 99 Grays Inn Rd., London WC1 8UT. Phone: 01-831-9252, Telex: 262346.

Euan Rose, Bill Dunlop, Stephen Thomas, Beere Hobson Assoc., 345 Goswell Rd., Islington, London EC1V 7HN. Phone: 01278 3415/6 (reps for all CWCI publications except Computer Management and Computer Business Europe).

**France:** Axel Leblois, Computerworld Communications S.A., 185 Avenue Charles De Gaulle, 92200 Neuilly Sur Seine, Paris. Phone: 747.12.72. Telex: 613234 F.

**Italy:** Daniela Comboni, Gruppo Editoriale Jackson, s.r.1, Via Rosellini 12, 20124 Milano.

**Japan:** Mr. Shuji Mizuguchi, Computerworld Japan, 7-4 Shintomi 1-Chome, Chuo-ku, Tokyo 104. Phone: (03) 551-3882, Telex: 252-4217 (Computerworld Japan only).

H. Kajiyama, Tokyo Representative Group, Sanshin Kogyo Bldg. 3F, 2-10 Kanda Jimbo-cho, Chiyoda-ku, Tokyo 101, Phone: (03) 230-4117/8, Telex: J26860 (reps for all CWCI publications except Computerworld Japan).

**Mexico:** Richard Small, Computerworld de Mexico, Oaxaca 21-2, Colonia Roma, Mexico City 7 D.F. Phone: (905) 514-4218, (905) 514-6309. Telex: 1771300 ACHAME, 1777809 ACHAME.

**Norway:** Mr. Morten Hansen, Gen. Mgr., CW Norge A/S, Hovinveien 43, P.O. Box 2892, Toeyen, Oslo 6. Phone: 2/647725. Telex: (856) 7647725.

**Saudi Arabia:** Mr. Omar Dusuki, General Manager, Saudi Computerworld, P.O. Box 5456, Jeddah. Phone: 6519660. Telex: (928) 401205.

**Southeast Asia:** Mr. David Naidu, General Manager, Asia Computerworld, Pte. Ltd., 11-08/11-10 Goldhill Plaza, Newton Road, Singapore. Phone: 250-4444. Telex: (786) RS 37003

Melvyn Stannett, Regional Sales Mgr., Asia Computerworld Pte. Ltd., 2023 Swire House, 6 Connaught Rd. Central, Hong Kong. Phone: 210385. Telex: (780) 72827 HX COMWR.

**Spain:** Neil Kelley, Computerworld/Espana, Barquillo 21, Madrid 4. Phone: 231-23-86; 231-23-86; 231-22-88. Telex: 47894(CW E).

**Sweden:** Bengt Marstedt, Nova Media AB Sodra Hamnvagen 22, S-115-41 Stockholm. Phone: 46-8-67-81-80. Telex: 14904 NOVACW.

**The Netherlands:** Johannes A. Witvoet, Mgr. Dir., Computerworld Benelux, Van Eeghenstraat 84, 1071 EK Amsterdam. Phone: 020-646426. Telex: (844) 18242.

**Venezuela:** Kalman Von Vajna Nagy, CW Communicaciones CA, Torre Maracaibo, piso 13, Oficina H, AV. Libertador, Caracas. Phone: 72-76-30.

**West Germany:** Eckhard Upadel, CW Publikationen, Friedrichstrasse 31, 8000 Munich 40. Phone: (089) 38172-0. Telex: 5215350.

---

# ADVERTISERS INDEX

ADR ............ 3
American Hoechst ............ 19
Ampex ............ 60-61
Applied Software ............ 58
AT&T Information Systems ............ 52-53,58,59

BGS ............ 86

California Software, Inc. ............ 42
CMI Corp. ............ 55
Codercard ............ 66
Codex Corp. ............ 62
Computer Corporation of America ............ 17
Computer Information Systems ............ 43
Computer Management Research ............ 86
Comshare ............ 9
Control Data Corp. ............ ID/2
CPT, Inc. ............ ID/3
CW Corporate ............ ID/6
CW Italy ............ 58
CEI ............ 40

Data General ............ 10-11
Datatab ............ ID/16
Datagram ............ 55
Datasouth Computer ............ ID/13
Digital Equipment Corp. ............ 20-21
DJC Corp. ............ 79
Dorlen Products ............ 84

Eastman Kodak Co. ............ 44-45
EDS ............ 16
Elsevier Science Publishing Co. ............ 33

Fibronics ............ 13
Fischer-Innis ............ 41
Fusion Products ............ 39
Future Computing Inc. ............ 34

Goal Systems ............ ID/13

Help/38 Systems ............ 45
Hewlett Packard ............ 86-87
Honeywell Information Systems ............ 28-29

IMS Associates, Inc. ............ 18
Innovation Data Processing ............ 7

Landmark Systems ............ 35
Lease Programs Inc. ............ 5
Levi, Ray & Shoup ............ 6

Marketext ............ ID/8
McCormack & Dodge ............ 23

Memorex ............ ID/4-ID/5
Michaels, Ross & Cole ............ 38
MicroFrame ............ 63
Microlite ............ 46-49

NCR Comten ............ 38
NCR Corp. ............ 64-65
NCR-Micrographic Systems ............ ID/16
Netec ............ 79
Network Management ............ 24
Northern Telecom ............ 67-69
Novell, Inc. ............ 85

Oracle Corp. ............ 47

Pactel Communications ............ 76-77
PC Expo ............ 90
Protocol Computers ............ 86

Radio Shack ............ 79
Realia Inc. ............ 73
Rolm Corp. ............ 80-81

Sage Systems ............ ID/14
Sanitaya Corp. ............ ID/12
SAS Institute ............ 12,ID/8-ID/9
SofTool Corp. ............ 88
Software AG ............ 30-31
Software International ............ ID/11
Sperry Corp. ............ 89
SPSS, Inc. ............ 79
Sterling Software ............ 25,31
Syncsort ............ 6
Sysod ............ 83

Tandem ............ 26-27
Teletype Corp. ............ 22
Televideo Systems ............ 65
Televideo Terminals ............ ID/15
Telex ............ 38-39

UCCEL ............ ID/7
Uninet ............ 54
USL Data Systems ............ 34

Val-Tel ............ 114

Westwood Computer ............ 16
Whitesmiths, Ltd. ............ 14

Xerox Corp. ............ 30-31

Zenith Data Systems ............ 73-75

*This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.*

# Computerworld Sales Offices

Publisher/Vice-President/Donald E. Fagan

Director/National Sales/Edward P. Marecki
Manager/Marketing & Sales Operations/Kathy Doyle
COMPUTERWORLD, 375 Cochituate Road, Box 880,
Framingham, MA 01701
(617) 879-0700

BOSTON SALES OFFICE (617) 879-0700
Northeast Regional Manager/[illegible]
District Managers/[illegible], Michael F. [illegible]
[illegible]
Account Manager/[illegible]
Sales Assistant/[illegible]
COMPUTERWORLD, 375 Cochituate Road, Box 880,
Framingham, MA 01701

CHICAGO SALES OFFICE (312) 827-4433
Midwest Regional Manager/[illegible]
District Managers/[illegible]
Sales Assistant/[illegible]
COMPUTERWORLD, 2600 South River Road, Suite 304,
Des Plaines, IL 60018

NEW YORK SALES OFFICE (201) 967-1350
Eastern Regional Director/Michael J. [illegible]
Senior District Manager/[illegible]
District Managers/[illegible]
Account Manager/[illegible]
Sales Assistants/[illegible]
COMPUTERWORLD, Paramus Plaza I,
140 Route 17 North, Paramus, NJ 07652

LOS ANGELES SALES OFFICE (714) 261-1230
District Managers/[illegible], Robert [illegible]
Western Regional Director/William J. Healey
COMPUTERWORLD, 18004 Sky Park Circle, Suite 280,
Irvine, CA 92714

SAN FRANCISCO SALES OFFICE (415) 421-7330
Western Regional Director/William J. Healey
Senior District Manager/[illegible]
District Managers/[illegible], [illegible] V. [illegible],
[illegible]
Account Manager, Classified/[illegible]
COMPUTERWORLD, 300 Broadway, Suite 20,
San Francisco, CA 94133

ATLANTA SALES OFFICE (404) 394-0758
District Manager/[illegible]
Eastern Regional Director/Michael J. [illegible]
Sales Assistant/[illegible]
COMPUTERWORLD, 1400 Lake Hearn Drive, Suite 330,
Atlanta, GA 30319

HOUSTON SALES OFFICE (713) 666-1220
District Manager/[illegible]
Western Regional Director/William J. Healey
COMPUTERWORLD, 5400 Westheimer, Suite 110,
Houston, TX 77056

CLASSIFIED ADVERTISING (617) 879-0700
National Sales Manager/Walter S. Kott
National Recruitment Sales Manager/Al DeMille
COMPUTERWORLD, 375 Cochituate Road, Box 880,
Framingham, MA 01701

CW INTERNATIONAL MARKETING SERVICES
General Manager/[illegible]
Manager, East Coast/Frank Collins
COMPUTERWORLD, 375 Cochituate Road, Box 880,
Framingham, MA 01701
(617) 879-0700
Manager, West Coast/[illegible]
COMPUTERWORLD, 1300 Marsh Road
Menlo Park, CA 94025
(415) 328-[illegible]

## CW COMMUNICATIONS/INC.

Board Chairman
Patrick J. McGovern
President
W. Walter Boyd
Executive Vice-President
Lee Vidmer

Publisher/Vice-President, Donald E. Fagan. Group VP-Communication Services, Jack Edmonston. Group VP-Circulation, Margaret Phelan. VP-Finance, William P. Murphy. VP-Editorial, John Whitmarsh.

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 880, Framingham, MA 01701
Phone: (617) 879-0700, Telex: 95-1153.

**SALES** National Director, Edward P. Marecki. National Sales Manager/Classified Advertising, Walter S. Kott. Manager/Marketing & Sales Operations, Kathy Doyle. Corporate Advertising Administrator, Frank Collins. National Recruitment Sales Manager, Al DeMille. Display Advertising Manager, Anne Hadley. Display Advertising, Maureen Carter, Carolyn [illegible], George W. Griffin, Suzanne Wetzel, Lisa Morse. Classified Operations Manager, Cynthia Delany.

**COMMUNICATION SERVICES** Group Vice-President, Jack Edmonston. Director Research, Kathryn Dinneen. Sales Promotion Director, Liz Johnson.

**PRODUCTION** Production Director, Peter Holm. Production Manager, Marlene Stibal. Paste-Up Manager, Patricia Gaudette. Typesetting Manager, Carol Polack. Art Director, Tom Monahan. Graphic Designer, P. Charles Ladouceur.

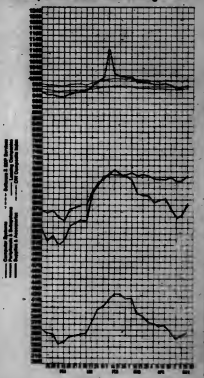
**CIRCULATION** Group Vice-President, Margaret Phelan. Fulfillment Manager, Maureen Burke.

**CONFERENCE MGT. GROUP** President, William R. Leitch.

**SYSTEMS** Systems Manager, Thomas Pfau.

*Computerworld can be purchased on 35 mm microfilm through University Microfilm Inc., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone (313) 761-4700. Computerworld is indexed; write to Circulation Dept. for subscription information.

## Computerworld Stock Trading Index*



# Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, [illegible]

All statistics compiled, computed and formatted by
TRADE QUOTES INC
Cambridge, Mass. 02139

COMPUTER SYSTEMS

[illegible]

LEASING COMPANIES

[illegible]

COMPONENTS

[illegible]

SOFTWARE & DP SERVICES

[illegible]

PERIPHERALS & SUBSYSTEMS

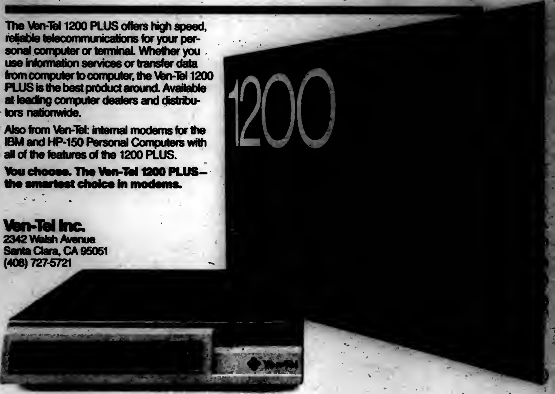
[illegible]

SUPPLIES & ACCESSORIES

[illegible]

# A few smart reasons to buy our smart modem:

| Features | Ven-Tel 1200 PLUS | Hayes |
|---|---|---|
| 1200 and 300 baud, auto-dial, auto-answer | Yes | Yes |
| Compatible with "AT" command set | Yes | Yes |
| Can be used with CROSSTALK-XVI or Smartcom II software | Yes | Yes |
| Regulated DC power pack for cool, reliable operation | Yes | No |
| Eight indicator lights to display modem status | Yes | Yes |
| Speaker to monitor call progress | Yes | Yes |
| Attractive, compact aluminum case | Yes | Yes |
| Two built-in phone connectors | Yes | No |
| Compatible with The Source and Dow Jones News Retrieval | Yes | Yes |
| Unattended remote test capability | Yes | No |
| Phone cable included | Yes | Yes |
| Availability | Now | |
| **Price** | **$499** | **$599** |



The Ven-Tel 1200 PLUS offers high speed, reliable telecommunications for your personal computer or terminal. Whether you use information services or transfer data from computer to computer, the Ven-Tel 1200 PLUS is the best product around. Available at leading computer dealers and distributors nationwide.

Also from Ven-Tel: internal modems for the IBM and HP-150 Personal Computers with all of the features of the 1200 PLUS.

**You choose. The Ven-Tel 1200 PLUS— the smartest choice in modems.**

**Ven-Tel Inc.**
2342 Walsh Avenue
Santa Clara, CA 95051
(408) 727-5721

Crosstalk is a trademark of Microstuf; Hayes and Smartcom II are trademarks of Hayes Microcomputer Products.